DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

ORIGINAL

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

NINETY-SEVENTH CONGRESS

SECOND SESSION

ON

S. 2248

AUTHORIZING APPROPRIATIONS FOR FISCAL YEAR 1983 FOR PROCUREMENT, FOR RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, AND FOR OPERATION AND MAINTENANCE FOR THE ARMED FORCES, TO PRESCRIBE PERSONNEL STRENGTHS FOR THE ARMED FORCES AND FOR CIVILIAN PERSONNEL OF THE DEPARTMENT OF DEFENSE, AND FOR OTHER PURPOSES

PART 6—SEA POWER AND FORCE PROJECTION

MARCH 5, 8, 12, 15, 16, 18, 19, 22, 23, 1982

Y4.Ar5/3:D36/7/983/PT.6

Printed for the use of the Committee on Armed Services

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

NINETY-SEVENTH CONGRESS

SECOND SESSION

ON

S. 2248

AUTHORIZING APPROPRIATIONS FOR FISCAL YEAR 1983 FOR PROCUREMENT, FOR RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, AND FOR OPERATION AND MAINTENANCE FOR THE ARMED FORCES, TO PRESCRIBE PERSONNEL STRENGTHS FOR THE ARMED FORCES AND FOR CIVILIAN PERSONNEL OF THE DEPARTMENT OF DEFENSE, AND FOR OTHER PURPOSES

PART 6—SEA POWER AND FORCE PROJECTION

MARCH 5, 8, 12, 15, 16, 18, 19, 22, 23, 1982

Printed for the use of the Committee on Armed Services

U.S. GOVERNMENT PRINTING OFFICE
94-471 O WASHINGTON : 1982

I
Best Available Copy

COMMITTEE ON ARMED SERVICES

JOHN TOWER, Texas, *Chairman*

STROM THURMOND, South Carolina
BARRY GOLDWATER, Arizona
JOHN W. WARNER, Virginia
GORDON J. HUMPHREY, New Hampshire
WILLIAM S. COHEN, Maine
ROGER W. JEPSEN, Iowa
DAN QUAYLE, Indiana
JEREMIAH DENTON, Alabama

JOHN C. STENNIS, Mississippi
HENRY M. JACKSON, Washington
HOWARD W. CANNON, Nevada
HARRY F. BYRD, Jr., Virginia
SAM NUNN, Georgia
GARY HART, Colorado
J. JAMES EXON, Nebraska
CARL LEVIN, Michigan

RHETT B. DAWSON, *Staff Director and Chief Counsel*
JAMES F. MCGOVERN, *General Counsel*
CHRISTINE E. COWART, *Chief Clerk*

SUBCOMMITTEE ON SEA POWER AND FORCE PROJECTION

WILLIAM S. COHEN, *Chairman*

GORDON J. HUMPHREY, New Hampshire
DAN QUAYLE, Indiana
JEREMIAH DENTON, Alabama

HARRY F. BYRD, Jr., Virginia
SAM NUNN, Georgia
GARY HART, Colorado

Best Available Copy

CONTENTS

CHRONOLOGICAL LIST OF WITNESSES

NAVY THREAT ASSESSMENT

MARCH 5, 1982

Page

Shapiro, Rear Adm. Sumner, U.S. Navy, Director, Naval Intelligence, accompanied by Vice Adm. C. A. H. Trost, U.S. Navy, Director, Navy Program Planning 3543

NAVY PROGRAM OVERVIEW

MARCH 8, 1982

Sawyer, Hon. George A., Assistant Secretary of the Navy (Shipbuilding and Logistics) 3595

Trost, Vice Adm. Carlisle A. H., Director, Navy Program Planning 3596

Paisley, Melvyn R., Assistant Secretary of the Navy (Research, Engineering and Systems), accompanied by Vice Adm. Robert R. Monroe, Director, Research, Development, Test and Evaluation, Office of the Chief of Naval Operations; Gerald A. Cann, Deputy; and Brig. Gen. Jacob W. Moore, Deputy Chief of Staff for Research, Development and Studies, U.S. Marine Corps 3650

Moore, Brig. Gen. Jacob W., U.S. Marine Corps, Deputy Chief of Staff for Research, Development and Studies 3657

DEFENSE OF U.S. INTERESTS IN SOUTHWEST ASIA

MARCH 12, 1982

West, Hon. Francis J., Jr., Assistant Secretary of Defense for International Security Affairs 3714

Bigley, Vice Adm. Thomas J., USN, Director, Plans and Policy Directorate, Organization of the Joint Chiefs of Staff 3726

Kingston, Lt. Gen. Robert C., Commander, Rapid Deployment Joint Task Force 3728

MISSILES AND OTHER WEAPONS

MARCH 15, 1982

Walters, Vice Adm. Robert L., U.S. Navy Deputy Chief of Naval Operations (Surface Warfare), accompanied by Vice Adm. E. B. Fowler, U.S. Navy, Commander, Naval Sea Systems Command; Vice Adm. Robert R. Monroe, U.S. Navy, Director, Research, Development, Test and Evaluation, Office of the Chief of Naval Operations; Gerald Cann, Principal Deputy Assistant Secretary, Research, Engineering and Systems, Office of the Secretary of the Navy; and Capt. S. O. Nunn, U.S. Navy, SCN Appropriation Manager, Office of the Chief of Naval Operations 3770

OCEAN VENTURE '81

MARCH 16, 1982

Page

Train, Adm. Harry D., II, U.S. Navy, Commander in Chief, U.S. Atlantic Fleet 3831

Lyons, Vice Adm. James A., U.S. Navy, Commander, U.S. 2d Fleet 3832

FORCE PROJECTION: CAPABILITIES AND PROGRAMS

MARCH 18, 1982

Carroll, Vice Adm. Kent J., U.S. Navy, Commander, Military Sealift Command 3850

Cowhill, Vice Adm. W. J., U.S. Navy, Deputy Chief of Naval Operations (Logistics), Office of the Chief of Naval Operations 3859

Walters, Vice Adm. R. L., U.S. Navy, Deputy Chief of Naval Operations (Surface Warfare), Office of the Chief of Staff (P.P. & O.) 3864

Miller, Lt. Gen. J. H., U.S. Marine Corps, Deputy Chief of Staff (P.P. & O.) 3870

Pihl, Brig. Gen. Donald S., Deputy Director of Weapons Systems, Office, Deputy Chief of Staff for Research, Development and Acquisition, Department of the Army 3881

MAJOR STRIKE PLATFORMS

MARCH 19, 1982

McDonald, Vice Adm. Wesley L., U.S. Navy, Deputy Chief of Naval Operations (Air Warfare), accompanied by Vice Adm. Robert L. Walters, U.S. Navy, Deputy Chief of Naval Operations (Surface Warfare); Vice Adm. Earl B. Fowler, Jr., U.S. Navy, Commander, Naval Sea Systems Command; and Rear Adm. Edward J. Hogan, Jr., U.S. Navy, Director, Aviation Manpower and Training, Division and Carrier Programs Division 3907

AIRLIFT PROGRAMS

MARCH 19, 1982

Allen, Gen. James R., Commander, Military Airlift Command 3960

Mosemann, Lloyd K., Deputy Assistant Secretary of the Air Force, Logistics 3968

Bowden, Brig. Gen. William P., Deputy Director, Logistics Plans and Programs, USAF 3990

ANTISUBMARINE WARFARE PROGRAMS

MARCH 22, 1982

Walters, Vice Adm. Robert L., U.S. Navy, Deputy Chief of Naval Operations (Surface Warfare), accompanied by Gerald A. Cann, Principal Deputy Assistant Secretary of the Navy (R.E. & S.); Vice Adm. R. R. Monroe, Director, Research, Development, Test and Evaluation Division; and Vice Adm. E. B. Fowler, Commander, Naval Sea Systems Command 4034

Thunman, Vice Adm. N. R., U.S. Navy, Deputy Chief of Naval Operations (Submarine Warfare) 4038

McDonald, Vice Adm. Wesley L., U.S. Navy, Deputy Chief of Naval Operations (Air Warfare) 4046

NAVY POSTURE

MARCH 23, 1982

Lehman, Hon. John F., Jr., Secretary of the Navy, Department of Defense 4080

Hayward, Adm. Thomas B., Chief of Naval Operations, Department of the Navy, Department of Defense 4087

Barrow, Gen. Robert H., Commandant of the Marine Corps, Department of the Navy, Department of Defense 4088

Index i

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

FRIDAY, MARCH 5, 1982

U.S. SENATE,
SUBCOMMITTEE ON SEA POWER AND FORCE PROJECTION,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

NAVY THREAT ASSESSMENT

The subcommittee met in executive session at 2:07 p.m. in room 212, Russell Senate Office Building, Senator William S. Cohen, chairman, presiding.

Present: Senators Cohen, Byrd, Hart.

Staff present: Rhett B. Dawson, staff director and chief counsel; Paul C. Besozzi, minority counsel; Brenda K. Hudson, assistant chief clerk; L. Wayne Arny III, Frank J. Gaffney, James R. Locher III, Patrick L. Renehan, professional staff members; Drew A. Harker, Mark B. Robinson, research assistants; Kathleen L. McGuire, staff assistant.

Also present: Jim Dykstra, assistant to Senator Cohen; Paul Schreiber, assistant to Senator Denton; Don Imgram, assistant to Senator Quayle; Gray Armistead, assistant to Senator Byrd; Bill Lind, assistant to Senator Hart.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator COHEN. The subcommittee will come to order.

When I opened this same forum exactly 1 year ago and a day, I expressed several concerns. Among those were:

A diminished fleet stretched thin around the world.

The absence of even "a thin margin of superiority" over the Soviet Union.

The capacity of our shipbuilding industry.

The affordability and cost control in the shipbuilding plan.

Most importantly, the necessity to preserve the mandate for increased defense spending that we, the Congress, had received from the voters.

One year later because of the strength and imagination of the policies of the Secretary of the Navy and the Secretary of Defense, I feel slightly less uncomfortable—if not comfortable—about all of those points, except the very last one.

I sense that, due to Mr. Lehman's deployment policies and force goals, the CNO's "Pride and Professionalism" program and the congressional pay initiatives, the fleet is being managed more efficiently.

And while we appear to be no closer in the short term to regaining any margin of superiority, at least regaining it is now our stated goal. Moreover, competent, dedicated men are addressing the question of maritime superiority, as well as addressing the industrial base and affordability issues.

On the preservation of our mandate, I am more pessimistic than I ever was and take no pride in saying that I, for one, expressed this very fear—I believe Senator Byrd joined in the expression of that fear—a year ago that the American people are resilient, but we wonder to what extent.

This defense budget, while I think unquestionably necessary in view of what I think we are going to see today, runs smack up against the hard economic realities that the Nation faces. And, unfortunately, in an effort to achieve a greater balancing of the budget, the essential modernization programs are the most visible targets and are going to face the greatest threat in my judgment. This is going to occur irrespective of the fact that cutting these programs will have little impact on the budget deficits in the next 2 critical years.

It is going to be our job this year—even more than last—to insure that the programs that you are presenting to us are necessary and are able to withstand not only the scrutiny of Congress, but the scrutiny of the people who elect us and for whom we work.

We have to be responsible and alert in an absolute sense and be ready to disapprove ineffective programs. We also have to be responsible and alert in a relative sense and be ready to eliminate or reduce lower priority programs to insure that the authorization bill presented to the Congress meets whatever the Budget Committee guidelines are going to be.

It is absolutely essential that we do everything in our power to retain as much of the public mandate as we can in order to continue to rebuild our military forces.

Before I proceed, I would like to make one short statement about a general sense of good will as it should exist between the Defense Department and the services and the Congress. Gentlemen, I am referring to Chairman Melvin Price's opening statement before the R. & D. Subcommittee of the House Armed Services Committee. I would like to make it clear that I echo the thoughts expressed there. I am sure others on the subcommittee and the full committee share that same sentiment. A sense of good will is absolutely critical if we are going to garner the full support that we need for these maritime programs; and a sense of ill will can destroy that effort even if the merits of the case are sound.

Those are the facts of American politics, and the Navy, with a shipbuilding program and overall budget of the magnitude that I see, should be, I think, especially sensitive to these realities. Sadly, that good will has been eroded somewhat and it is going to require a concerted effort to restore it.

Now, after that somber note, let me turn to welcome our witnesses.

As I said earlier, it was exactly 1 year and a day ago that this subcommittee opened its first session to review the 1982 budget. Co-incidentally, our first witness was—and again is this year—Admiral Shapiro, whom we asked to provide us with an assessment of the threat that is faced by our maritime forces around the world. I would like to welcome him back. I only hope that this year will be less hectic for you than ours has been, Admiral.

I would like to welcome Vice Adm. Carl Trost. Last year at this time he was the commander of the U.S. 7th Fleet and I would guess that he probably wishes he was back there right now.

Admiral **Trost**. Absolutely.

Senator **Cohen**. I was out there myself just a couple of weeks ago, Admiral.

Admiral Trost has graciously consented to be present to answer any questions on the U.S. force capabilities, dispositions, or operational and procurement strategies that may arise as a result of Admiral Shapiro's threat briefing. I do not expect that he will necessarily provide the precise, detailed explanations of our programs that we will hear in later testimony, but hopefully you will be able to help us understand some of the general policies and programs that we as a nation are pursuing in light of the current and future threats.

Before calling upon Admiral Shapiro, I would yield to my colleague, Senator Byrd.

Senator **Byrd**. Thank you. I think Senator Cohen made a fine statement. I have nothing to add to it, I will let it stand as it is and I associate myself with his remarks.

Senator **Cohen**. Admiral Shapiro?

STATEMENT OF REAR ADM. SUMNER SHAPIRO, U.S. NAVY, DIRECTOR, NAVAL INTELLIGENCE, ACCOMPANIED BY VICE ADM. C. A. H. TROST, U.S. NAVY, DIRECTOR, NAVY PROGRAM PLANNING

Admiral **Shapiro**. Thank you, Mr. Chairman, Senator Byrd. It is a pleasure to be back here again this year before the subcommittee to brief you on developments in the Soviet Navy that we have seen over the past year.

I have submitted a statement for the record and, with your permission, I would like to brief you on some of the highlights and expand on some things that are covered in my statement.

One moment for a commercial, if I may. You will notice the year 1882. The Office of Naval Intelligence will be celebrating its 100th anniversary on March 23—we will be going for at least another hundred years, and I hope with good fortune.

SOVIET NAVY

When I appeared before you last year I talked about the momentum of the Soviet development, and I concluded at that time that notwithstanding all of the economic woes that the Soviet Union was experiencing at the time and we expected would be facing in the future, that the Soviet leadership had elected to make the necessary investments in their Navy to build one—as we have indicated here—that would continue to pose both a political and an economic threat to the United States and its allies.

Unfortunately, that estimate is true, it remains intact. The evidence that we have seen over the past year only serves to confirm our earlier estimates. In fact, Gorshkov is heading toward a well-balanced Navy he continues to say he needs in order to not only carry out their mission in wartime—whether it be a conventional war or an all-out nuclear war. For that matter, perhaps even more importantly, to be able to support state interests at sea in peacetime. This is the type of development that we have been seeing.

As a matter of fact, as we look back at what has developed over the past year, I think it is fair to say this goal of a well-balanced navy is not only achievable, but is just over the horizon and closing fast.

Sometimes it is hard to understand why the Soviet Union would even be interested in developing a Navy or a maritime power of this magnitude. They are primarily a land power. Of course, their critical interests lie overseas. They have a very ambitious, aggressive foreign policy and they seek to extend their economic and political influence to various strategic areas, both directly and through their surrogates like Libya, Ethiopia, Cuba, in order to replace U.S. influence and create dissension among our allies, and to restrict U.S. access to the necessary world markets and raw materials that we need in order to exist.

At the same time they are preparing for the full spectrum of war including what they would hope would not happen, I believe, the all-out nuclear exchange between the Warsaw Pact and NATO countries.

The Soviet Navy is gearing up to play an increasingly important role across that entire spectrum, both peacetime uses and wartime uses.

What I would like to present to you this afternoon is the evidence that we have seen, particularly in 1981, from which you can judge for yourself whether or not they are achieving these goals.

SUBMARINE CONSTRUCTION

To speak first to submarine construction. I think you could characterize 1981 as the year of transition. The total numbers of new types of submarines, for that matter, surface combatants, produced during the year is not equal to that very spectacular year of 1980 when there were six new classes of ships and submarines that appeared. I characterize 1981 as the "breathing space" at the end of a 5-year plan [deleted].

These are the submarines that they currently have under construction. You will notice that there are not only nuclear type submarines but some diesel-powered submarines as well. Mostly the ones that they are using, the *Tango*'s, and the *Foxtrot*'s that they are building for export.

Senator **Cohen**. Admiral, we have had a lot of controversy about diesel-electric submarines. It has been raised as an issue in our subcommittee several times in the past. What is the Soviet's rational for going with the diesel-electric as opposed to a nuclear-powered?

Admiral **Shapiro**. I think one thing, the diesel of course does not require the manpower, trained manpower, the extensive construction programs. But it meets their missions in certain areas. They are very concerned about maintaining the security of their home waters—not only the defensive perimeter but being able to provide defenses for their ballistic missile submarines that I will describe later on.

They would also be effective in an interdiction of our sea lines of communication. We see their diesel submarines employed in that type of mode even now in peacetime.

But you will see later on, Mr. Chairman, that they are phasing out these diesel submarines and are replacing them with nuclear submarines now in our projections [deleted].

Senator **Cohen**. But does that give them a better balance, this overall balance that you talked about before? In other words, they have submarines that are cheaper, less capable, but nonetheless serve a very vital function as far as they are concerned.

Admiral **Shapiro**. It meets their mission, yes, sir.

Senator **Cohen**. They have these, and then they are going to switch to the nuclear powered submarines for the more offensive capability.

Admiral **Shapiro**. Yes, sir.

Senator **Cohen**. All right.

Admiral **Shapiro**. I will be showing you some of those types and precisely how they are being deployed.

Let me take the ballistic missile submarines. You are all well familiar, I think by now, the *Yankee*-class submarine was their initial entry into the seaborne strategic deterrent. They built 34 of these submarines and they are still deployed off the U.S. east and west coast on a regular basis. But they do have a limitation in that their missiles are about 1,500 nautical miles maximum range. Consequently, they have to come in quite close and have to traverse our "friendly waters," if you will, in order to reach their station.

They are starting to phase these submarines out. There are [deleted] these and they are being decommissioned. [Deleted.]

They indicated they have decommissioned these things in order to stay within the limits of the SALT I agreement, which allows them 62 modern submarine platforms and 950 missile tubes. They have done this as the *Delta*-class submarines have entered the inventory. A total of 35 *Delta*-class submarines have now been built. [Deleted.]

These submarines have bigger missiles, longer-range missiles, missiles with a range in excess of 4,000 nautical miles, which means that they can stay in the relative sanctity of their home ports or home waters and launch their missiles and cover targets throughout the United States without ever venturing out into the open oceans.

This gives you some idea of the range coverage of a *Delta* sitting in port up in the Northern Fleet area. As you see, in the various modes it covers the entire continental United States.

The big news in 1980, of course, was the advent of the *Typhoon*. This is a 25,000-ton submarine, 25,000-ton displacement, with 20 missiles up forward rather than back aft as we have seen on all other ballistic missile submarines.

The missile system here is the SS-NX-20, [deleted]. There have been [deleted] tests of the SS-NX-20 so far since they started testing it in 1980; [deleted].

They had [deleted] successful firings, [deleted]. The first unit of this class is currently [deleted] up in the Northern Fleet area. We expect them to turn them out [deleted] before the end of the decade. We would expect them to [deleted] later this year.

To give you an idea of some range capabilities of the SS-NX-20, again from the comparative safety of home waters or for that matter in port covering the entire continental United States and for that matter the whole North American continent with that missile which has MIRV capability of [deleted] independently targeted reentry vehicles.

There is a unique construction to the *Typhoon*, a very bulbous appearance, [deleted]. It certainly would have good capabilities for operating [deleted]. It has an unusual shape. [Deleted.] There is a very flat area up forward on the deck, [deleted].

Consequently, we believe we are going to see more operations by the Soviet SSBN's [deleted] in their own home waters [deleted].

STRATEGIC ASW

Senator **Cohen**. Admiral, what are the implications of that for strategic ASW?

Admiral **Shapiro**. This of course complicates considerably the ASW problem [deleted].

It does in fact make [deleted] our problem more difficult.

Senator **Hart**. And any ASW technique or technology based upon sensing, [deleted].

Admiral **Shapiro**. Yes, sir, I would say so. Yes.

Senator **Hart**. As a general proposition. I am obviously a layman here and just thinking off the top of my head, as it were.

Admiral **Shapiro**. Of course, you cannot operate anywhere you want [deleted].

Admiral **Trost**. The principal sensors we would use [deleted]. Our problem is amplified [deleted].

So, it is a difficult proposition [deleted].

Senator **Hart**. But you are suggesting very strongly that they are designing their next generation of submarines to substantially compound our ASW problem; is that correct?

Admiral **Shapiro**. If they are going to [deleted] as this would suggest. [Deleted.]

But the way he is built, it would suggest to us quite strongly they are going to try [deleted]. That certainly will compound the problem.

Senator **Cohen**. There is [deleted] in essence.

Admiral **Shapiro**. That is right.

Another way of looking at it, of course, if you are not operating under those conditions, then you take advantage of the wide expanses of the ocean and the depth, as we do, which also presents quite a problem for somebody who is trying to find you.

Geography in this case, I think, is what is dictating it to the Soviets. They are up there, [deleted] it makes good sense.

This, I think, is revealing the comparative size of the United States and Soviet SSBN. This is the *Delta* that I talked about. Then the *Typhoon* which is about the same length as the *Ohio*, almost 600 feet long. Considerably larger in overall size, 25,000 tons as opposed to 17,000 for the *Ohio;* and then, again that very bulbous shape.

[Deleted.] They build things big. The *Oscar* SSGN—this is the one that carries a guided missile, a cruise missile against surface targets. This also made its first appearance in 1980. The first of these is already operational up in the Northern Fleet area.

It is shown here along-side the *Charlie* class submarine which is the earlier model of the submarine that fired missiles from below the water against a surface target.

[Deleted.] The big difference is, it is not only much bigger than anything else that they have produced insofar as an attack-type submarine, but it has 12 missile tubes on either side of the sail, a total of 24 cruise missiles are carried by this submarine—a missile of the SS-NX-19 variety which has a range of 500 km, [deleted]. Again, fired while the submarine is submerged.

This is the flight profile of the SS-N-19. As I indicated, it reaches about 500 km. This, incidentally, is the same missile that is carried by their nuclear-powered cruiser, the *Kirov* that I will be showing you shortly.

We expect them to turn out [deleted] these [deleted] for a total [deleted] the end of this decade. We expect that they will deliver another one of these [deleted].

Senator **Hart**. Admiral, what is the theory behind that flight profile?

Admiral **Shapiro**. I do not know. I would like to address that later on for the record, if I may, sir.

[The information follows:]

SS-NX-19 PROFILE

U.S. weapons developments are a major consideration in Soviet weapons design efforts, and they routinely design offensive systems to stress and challenge our defensive capabilities. The SS-NX-19 profile, [deleted] antiship missile defense capabilities.

Senator **Hart**. Is it not [deleted] that compounds the problem of these?

Admiral **Shapiro**. It obviously compounds our problems. But why it goes to this [deleted] I do not know.

Senator **Hart**. I care less about that [deleted].

Admiral **Shapiro**. Our acquisition problem would be complicated by that, yes, sir.

Admiral **Trost**. I suspect it is first of all, to gain an area where he flies efficiently to get the range, and then, when he reaches the point [deleted].

Admiral **Shapiro**. They delivered one of the *Alfa*-class submarines last year.

Senator **Hart**. Sorry, what was the tonnage of the *Oscar?*

Admiral **Shapiro**. The *Oscar* is 14,000 tons, I believe. I will verify that for you, sir. It is about 147 meters, I know; I think it is about 14,000 tons.

They delivered another *Alfa*-class submarine, this is a titanium hull. This is the one for deep diving, high speed, [deleted]. There are now [deleted] *Alfa's* that are operational and [deleted] more that are in various stages of construction. [Deleted.]

This, of course, is used primarily in an antisubmarine warfare antiship role, carrying torpedos as well as a capability for antisubmarine warfare weapons as well. [Deleted.]

Senator **Cohen**. What is the speed on that, again?

Admiral **Shapiro**. The *Alfa* has a maximum speed [deleted].

Senator **Cohen**. Is that considered to be extraordinary?

Admiral **Shapiro**. Yes, sir. It is quite fast, and of course the deep diving [deleted].

Senator **Cohen**. How do they achieve that [deleted] speed? What do they do to get that?

Admiral **Shapiro**. It is very light-weight, small. We expect that they have an improved power system in there as well.

Senator **Cohen**. [Deleted.]

Admiral **Shapiro**. [Deleted.]

Senator **Byrd**. That is [deleted].

Admiral **Shapiro**. Yes, sir.

Senator **Byrd**. What is our fastest submarine?

Admiral **Shapiro**. Sir?

Senator **Byrd**. What is our fastest submarine?

Admiral **Trost**. Our fastest submarine is a 688 class, [deleted].

I might, in further response to Senator Cohen's question about speed say, the Soviets have traditionally, with their nuclear powerplants and even their pressurized water plants, managed to pack a much higher power density into a submarine hull. [Deleted.]

It was subsequently changed to a pressurized water plant which took a considerably greater amount of space and had less total thermal efficiency. So, the liquid metal is just a more efficient plant.

Senator **Hart**. Do you think they solved some of the reactor problems that we had?

Admiral **Trost**. I suspect so. I think we know that they had considerable problems with the first of the class that was built [deleted].

Admiral **Shapiro**. They were working on it in the early 1960's, as a matter of fact, actually it goes back into the late 1950's when they first started to work on this. The first one never did become operational. They had it cut in pieces and it was not until 1978 that the first one became operational. So, they obviously experienced considerable difficulty.

Senator **Cohen**. What kind of threat does this pose? In particular, what is the mission of this submarine as compared to the others?

Admiral **Shapiro**. This submarine could be used, as I indicated, in an antisubmarine warfare role against our submarines, or in protection of their own SSBN's. We believe that that certainly is very high on the list. It could be used as an antiship platform as well, in all routine attack-type submarine functions.

Senator **Cohen**. How many are they building?

Admiral **Shapiro**. They have [deleted] operational now, sir, and [deleted] more under construction in various phases of construction. We expect, as I said, [deleted], a total [deleted], by the time they are through [deleted].

They are also continuing to build a *Victor*-class submarine, again primarily an antisubmarine warfare submarine, but it does have capability, certainly, against surface combatants [deleted]. In other words, it provides security services to their own ballistic missile submarines. [Deleted.]

[Deleted] these have been built so far and are currently operational. They carry torpedos and ASW weapons, the SS-N-15 which fires a depth charge up to a range of 25-30 miles; the SS-N-16 which fires a homing torpedo out to that same range.

What is unique about the *Victor* [deleted].

Also, we have noticed [deleted] in the *Victor* [deleted] that we have not seen in any of the other types of Soviet submarines.

We have also become aware of a new type of [deleted].

As you can see, [deleted].

We know that the *Victor*-class submarine [deleted].

There are probably other classes of Soviet submarines that either have that [deleted.]

Senator **Hart**. Excuse me, Admiral, I am trying to read [deleted].

Admiral **Shapiro**. Yes, sir. [Deleted.] That is true of all of them.

Senator **Hart**. What kind of damage would that [deleted] do to a carrier?

Admiral **Shapiro**. It depends on where it hits it. It is of course a formidable weapon.

Senator **Cohen**. What is the speed of it?

Admiral **Shapiro**. It is capable [deleted].

Now, we are just beginning to learn about this [deleted], I should point out.

Another weapon, new weapon, which has been coming into the Soviet inventory is currently still in a test stage, is the missile that we have designated the [deleted] a [deleted] cruise missile. It can be fired [deleted].

Again, it can be fired [deleted].

I will spend a few minutes, now, on surface combatant construction. Again, there was [deleted] the total numbers of surface ships, principal surface ships that were delivered last year, [deleted]. I would like to talk about some of the principal surface combatants they currently have under construction.

The *Udaloy*-class guided missile destroyer, primarily an ASW platform. The first of the class was launched in 1980, operated in the Baltic Sea and has since been transferred to the Northern Fleet.

There [deleted] currently operational, [deleted] under construction. We expect [deleted] these by the end of the 1980's. This is an 8,000-ton destroyer, gas turbine. As I indicated, primarily antisubmarine warfare. It carries the SS-N-14 [deleted] antisubmarine warfare missiles [deleted]. Of course, it has variable depth sonar and a telescoping hangar for ASW helicopters.

Another new class is *Sovremennyy* class, a guided missile destroyer. Again, launched in 1980. [Deleted] these are also in service, [deleted] in various stages of construction. We expect [deleted] these to be built by the end of this decade.

Sovremennyy, again about 8,000 tons but with a steam plant, steam propulsion plant. What is unique about *Sovermennyy* is that she has large caliber guns, 130mm guns fore and aft; these are the largest guns put on any Soviet ship since the 1950's.

We believe this ship will probably be employed at least in some part for gunfire support for amphibious operations; it certainly is fit for that purpose.

I should point out that there is a new missile system in the Soviet Union, [deleted].

Senator **Cohen**. What kind of a warhead does that carry?

Admiral **Shapiro**. That of course could carry either as well, sir.

Senator **Cohen**. Senator Hart asked the question, what kind of damage does that do to a carrier, depending on where it strikes?

Admiral **Shapiro**. Depending on where it strikes [deleted].

I might address, talking about amphibious warfare, we have seen some effort going into building up their amphibious capabilities as well. Large numbers of *Ropucha*-class LST's that are being built. As indicated here, there are [deleted] in service and a number more that are under construction.

And then of course the *Rogov*-class LPD that you are familiar with. A second of this class is now under construction. This is about three times the size of an LST. It carries not only landing craft on its well deck, but helicopters and two to three of the *Lebed*-class air-cushioned vehicles.

The *Lebed*—one is shown here—can carry a platoon of Soviet naval infantry, skim over the water onto the beach. They also have the *Aist*-class air-cushioned vehicle, quite a bit larger, [deleted]. This can carry a platoon of naval infantry and [deleted] amphibious tanks. They have [deleted] these in their inventory.

Senator **Cohen**. What is the speed of that?

Admiral **Shapiro**. I think [deleted] sustained speed. These were used, incidentally, in a very large amphibious exercise in the Baltic this past summer that I will describe later on.

MERCHANT SHIPS

Merchant ships, they continue to turn these out in great numbers, and many of them have direct application for amphibious warfare, either an assault role or in an amphibious support role. Of course, they are used extensively as arms carriers, delivering ships and weapons to some of their Third World client states.

One of the types of ship that is used significantly, both in commercial traffic and also in amphibious operations, is a roll-on roll-out ship built so that you can drive tanks or trucks, or whatever you want to transport across a very smart ramp and drive them back off. You can even land them in the water that is, amphibious tanks. [Deleted.] It is outfitted very much like a man-of-war inside it so far as ventilation systems. They can carry [deleted] tanks on a ship this size.

These ships, incidentally, were used in that large amphibious exercise in the Baltic. Merchant ships actually were pressed into use for the amphibious assault.

They have also built or had built for them by the Poles two *OB* Class hospital ships. One of these was in the Mediterranean area, actually homeported [deleted]. The other is in the Pacific area. Again, [deleted], we estimate.

They are not only used to support their operation but are very effective, of course, for flag-waving operations. One of them, the one that is in the Pacific, steamed through the Indian Ocean and visited many ports on the way.

Back to the major surface combatants, the nuclear-powered cruiser, the *Kirov* again, delivered in 1980. It became operational last year, tested all of its weapons systems. [Deleted]. It is now operating in the northern fleet area. It is a very large ship, just under 28,000 tons. It encompasses the most modern, capable weapons system that I would like to describe.

The SS-N-19 that I described before, the same cruise missile that is on the *Oscar*-class submarine. There are 20 of them here under the main deck. [Deleted.]

Then the SA-N-6, a surface-to-air missile system. These are loaded vertically [deleted].

It also has an ASW capability, the SS-N-14. In this case it has a reload capability. [Deleted.] This is the first Soviet ASW [deleted] missile system we have seen that has a reload capability. It is carrying [deleted] reload missiles [deleted].

Then, of course, guns, 100mm guns. The second of this class has been launched, is fitting out, is expected to start sea trials late next year. This is in the Baltic, in the Leningrad Shipyard. [Deleted.]

This is another very large ship under construction. We have not seen the first of this class come out so we do not know what its name is, we call it *Black-Com I.* It is being built in the Black Sea. [Deleted.] It is about 12,000 tons. This is again a gas turbine plant. It has the SA-N-6 that I just showed you on the *Kirov,* it has [deleted] Sam missiles there.

[Deleted] it has another missile system, the SS-N-12 [deleted]. It is the same missile that they have on their carriers, in the *Kiev* class carriers.

As I indicated, there is one of those fitting out now. There are [deleted] more under construction. We expect [deleted] the *Black-Com I*'s to be delivered by the end of this decade.

SOVIET NAVAL AIRCRAFT

To speak a moment about Soviet naval aircraft. At this point, with the exception of the Forger which is on their carriers—that is a VTOL-type aircraft—everything else is land based. Of course, this is a very poor picture here, but I will show you a better one, the Backfire. They have built [deleted] these that have been turned over to Soviet Naval Aviation, and this of course is the one that we are concerned most about from an attack-type standpoint from the various bases. [Deleted.] These would be the range or capabilities of the Backfire. [Deleted.]

With the advent of the aircraft carrier in the Soviet Union they are now making preparations to move their tactical air to sea. The third of the *Kiev* class has been launched. [Deleted], it is called the *Novorossiysk;* [deleted]. We expect that to start sea trials soon. The first of the class, of course, was the *Kiev.* She operates in the Northern Fleet area and frequently comes down into the Mediterranean. The *Minsk* is the second of that class, she is out in the Pacific, Vladivostok. [Deleted.]

This is *Kiev* unit No. 4 [deleted]. We expect it to be launched later [deleted]. What is interesting here is that the Finns have built these [deleted] far more than any requirement that they have had for the *Kiev*-class for which it has been built.

[Deleted] our estimate is that after *Kiev IV* is launched [deleted] they will lay the keel for a CTOL—conventional takeoff and landing aircraft carrier—[deleted]. This is where they have built all of the aircraft carrier-type ships so far, from *Moskva* class to the *Kiev*-class carriers.

Senator **Byrd**. How many aircraft carriers are actually in operation?

Admiral **Shapiro**. There are two in operation right now, sir; there is another one that is fitting out and should start sea trials, and then the fourth one will be launched this year. Then we expect them to lay the keel for the bigger one. I will show you what we think it is going to look like in just a moment.

Senator **Byrd**. The first one became operational when?

Admiral **Shapiro**. In 1976.

Senator **Byrd**. So, all of this has happened since 1976.

Admiral **Shapiro**. Yes, sir.

Senator **Cohen**. When you say the Backfire is assigned to the Navy, is it still land based?

Admiral **Shapiro**. Yes, sir. Half of them go to Soviet long range air, the Soviet Air Force; and half of them go to the Navy, it is just about half and half. Right now there [deleted] are operational in Soviet Naval Aviation. They operate from naval aviation fields, they are flown by—they have army-type grade markings, but they are naval aviators. Their markings are navy.

Senator **Cohen**. You did not touch upon the new bomber that is being considered.

Admiral **Shapiro**. I did not. I cannot really analyze it to any degree except in a closed session.

Senator **Cohen**. The Washington Post had a piece on it 2 days ago.

Admiral **Shapiro**. Yes, sir, I know. I do [deleted] have some information on it.

Senator **Hart**. Probably a Member of Congress read it into the record. [Laughter.]

Admiral **Shapiro**. I do not want to contribute to any more leaks.

The other evidence that we have that leads us to believe that they will in fact go to a conventional takeoff and landing aircraft carrier [deleted]. What we believe that they are going to produce is a carrier that will look like this generally, about 60,000 tons. It will have catapults and arresting gear, whereas, of course, the *Kiev* class does not, it only has VTOL aircraft or helicopters.

We believe it will be nuclear powered [Deleted.] Our best estimates are that they will build [deleted] these by the end of the century.

This is where the construction takes place. the places indicated in red are the submarine building yards; those in black is where they build their principal surface combatants. There are 5 submarine yards, 8 surface, major surface shipbuilding yards, and another 19 that are not shown here, where they build mine craft, patrol craft, and other smaller types of ships.

What is significant to us is that over the last few years there has been a major modernization and expansion program at virtually all of these yards. That indicates to us, of course, that they have elected to make a very significant investment in their shipbuilding industry, notwithstanding all the problems that they are having elsewhere in their economy.

Not only that, but they modernized these, they are putting computer-assisted manufacturing systems in there which normal manufacturing facilities in the Soviet Union do not normally have.

Let me give you some idea of some of the major shipyard areas. This is the one in Severodorinsk up in the Northern Fleet area, it is the lead yard for building their submarines. [Deleted.]

[Deleted.]

[Deleted.] By way of comparison to our Electric Boat Division. Our analyst decided to get a little closer to home, if you put one end of the building at the Capitol, the other would be down here at Memorial Bridge. It is a very large yard and this is only 1 of the total of 13 principal yards in the Soviet Union.

[Deleted.]

Surface ship construction, that is their major surface ship construction, Nikolayev is a big yard for that. This is where they build their carriers. And a comparison again, this is Newport News Shipyard.

[Deleted.]

Senator **Byrd**. Have you prepared the efficiency for the Soviet shipyards compared to the United States?

Admiral **Shapiro**. That is very hard to gage, Senator. They are not operating at full capacity, by any means. They sometimes seem to slow down. They have environmental problems, of course. But they do turn them out at a rapid rate.

Senator **Byrd**. Environmental problems would not hurt their military capability.

Admiral **Shapiro**. I meant it is difficult, some of these are located in some areas with very severe weather, sometimes that slows them down [deleted]. But because of that extreme cold, poor weather, it does slow them down.

But by and large, certainly their building rates would indicate that they are quite efficient, they turn these things out in pretty good order.

[Deleted.]

[Laughter.]

Admiral **Shapiro**. Taking a look at our forecasts of where they are going and what kind of a submarine force they are going to have. By the year 2000 we project [deleted] total numbers. What is indicated here, a qualitative increase as the diesel submarines are phased out and as the more capable nuclear-powered submarines come into being.

[Deleted.]

The same sort of thing can be said of their surface combatants. The numbers [deleted]. There certainly is going to be a major change in the quality because as the older single mission, smaller ships, less sophisticated ones are phased out, we are going to see the multipurpose, multimission bigger and far more capable ships like the *Kirov*, like the *Sovremennyy*, like the *Black-Com*, like the carriers come into being. But the total number [deleted] but they certainly will be far more capable than they are today.

Senator **Byrd**. Would you go back to the previous slide. Do you have a comparable chart showing the United States?

Admiral **Shapiro**. I do not, sir; but I am sure one can be provided.

Senator **Byrd**. Could you just tell us how the United States will be—what is that, year 2000 the last one?

Admiral **Trost**. Yes, I could. Our current SSN force levels this year will reach a level of about 91 submarines. We still have in operation five diesel submarines in the Pacific. Our force levels will increase in about the 1984–85 timeframe to just under 100. Now, that will count eight of the former *Polaris* submarines that are now in an attack role. [Deleted] as I recall, through the rest of this decade, and approaching a level of approximately 100 by the year 2000—on the assumption that we have a building rate of three to four a year for the balance of this decade.

Senator **Byrd**. Well, on the assumptions you have made, is the gap being widened or closed?

Admiral **Trost**. The numerical gap [deleted] because our force levels will remain approximately the same. Our forces also will have a qualitative improvement because we will be decommissioning in the period of the 1980's the submarines that were built in the late 1950's. They will be replaced by more capable ships—unfortunately more on a 1-for-1 basis. So, we will see a qualitative improvement and very little numerical change in our force levels.

U.S./SOVIET COMPARATIVE FORCES

Senator **Byrd**. Qualitywise, how will our forces in the year 2000 compare with the Soviets?

Admiral **Trost**. I think, Senator Byrd, I would have to speculate a bit and say that we see qualitative improvement not only in the ships themselves, in other words, in the capabilities of their weapon systems and their sensors.

We would see and expect continued improvement in the Soviet submarines as well. [Deleted.] We have seen better weapon systems being installed. So, I would expect that that qualitative edge that we now enjoy may well be whittled down somewhat, very much depends on how much effort we put into our continuing upgrade of our ships.

Senator **Byrd**. Thank you.

Senator **Cohen**. If we were Israel, would you recommend a preemptive strike at this point?

Admiral **Trost**. No; I think that would be a foolhardy policy for any country to follow.

Admiral **Shapiro**. I would like to shift now, if I may, to operations, and 1981 was a very impressive year from the standpoint of operations. The level of their effort, the tempo of their operations since they first started going to sea in earnest in the 1960's, there is about a tenfold increase.

Senator **Hart**. Excuse me, Admiral. Could you provide the committee—we have heard about, and we all talk about, the Soviet military buildup. Pick a period of time, 10, 15, or 20 years, and could you provide the committee graphics on the amount of that investment which has gone into maritime or sea power capability, and the same graphic for the United States over the same period of time?

Admiral **Trost**. I believe, Senator Hart, we could probably give you something like that on a comparative-force level. I am not certain the Navy would have—if you are talking about economic resources, I am not certain we could provide you that chart. But we will certainly attempt to.

[The information was subsequently supplied:]

Defense Spending

Senator **Hart**. Request comparison over 10 to 15, or 20 year period on what the USSR has spent on Navy compared to rest of defense versus what United States spent on Navy compared to rest of defense.

Admiral **Shapiro**. Between 1965-80 the U.S. Navy budget has remained fairly level in constant dollars while the Soviet Navy budget has increased [deleted] in constant rubles. See Figures 1 and 2.

TRENDS IN U.S. DEFENSE AND NAVAL BUDGETS

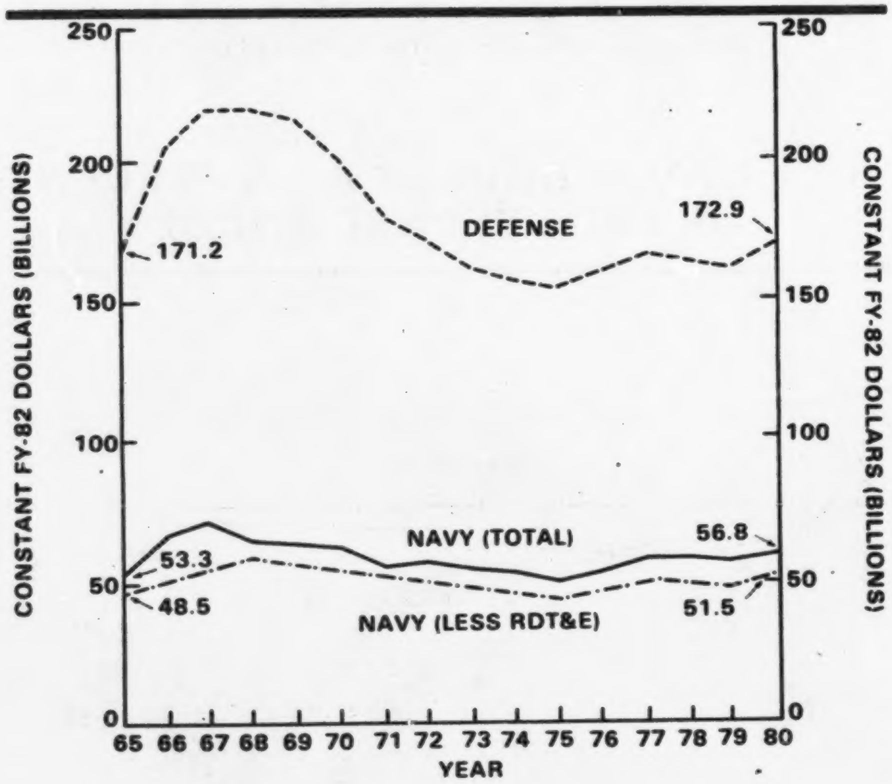
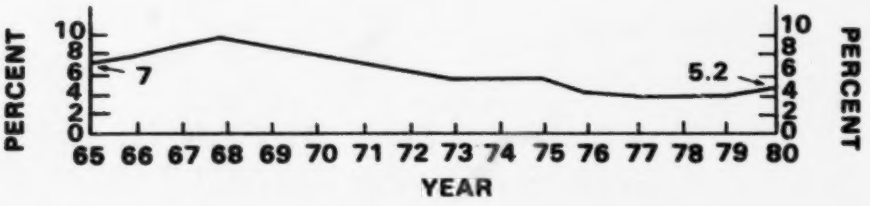


Figure 1

[Figure 2 deleted.]

During this same period, as shown by figure 3, the U.S. defense budget has declined from 7.0 to 5.2 percent of GNP. The U.S. Navy budget declined from about 2 percent (28 percent of 7) to 1.6 percent (30 percent of 5.2) of GNP (See figure 4). On the other hand, Soviet defense has grown [deleted] and the Soviet Navy budget has declined [deleted]. Thus, the Soviet Navy share of GNP [deleted]. See figures 5 and 6.

U.S. DEFENSE BUDGET AS PERCENT OF GNP



1980 - NAVY (LESS RDT&E) = 1.6% of GNP

Figure 3

U.S. NAVAL BUDGET AS A PERCENT OF THE DEFENSE BUDGET

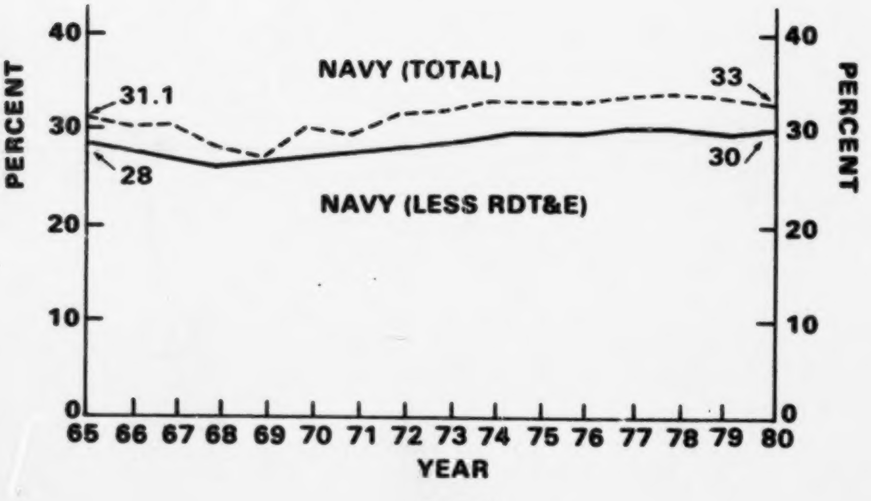
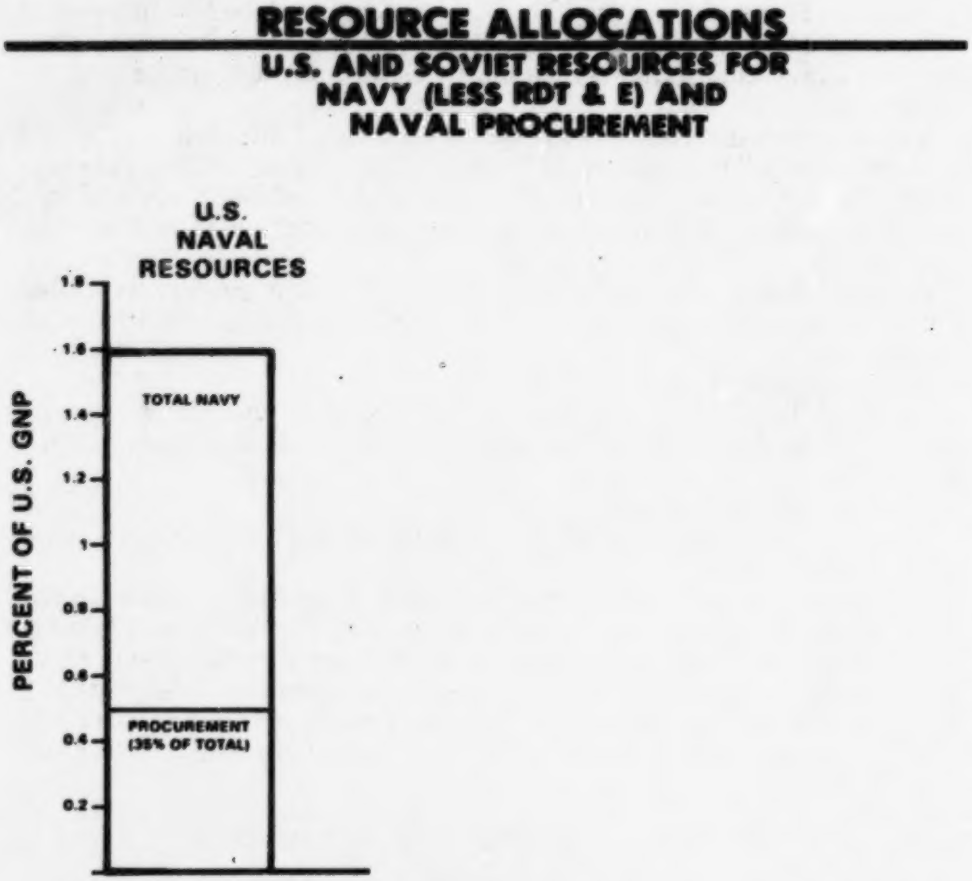


Figure 4

[Figures 5 and 6 deleted.]

Finally, because of significant differences in logistic, personnel, and operational policies and practices the Soviet Union can devote [deleted] its naval budget to pro-

curement, while the U.S. Navy can devote only 35 percent of its slightly greater resources to procurement. See figure 7.


RESOURCE ALLOCATIONS

U.S. AND SOVIET RESOURCES FOR NAVY (LESS RDT & E) AND NAVAL PROCUREMENT

Figure 7

Senator HART. Well, reach up into OSD or wherever you have to.

Admiral SHAPIRO. The thing that is difficult to depict in such things, Senator Hart, it is very difficult to make a straight comparison, as you well realize.

Senator HART. Well, Admiral, I could not agree with you more, but the Chiefs and the successive Secretaries of Defense do it every year in a posture statement. Unfortunately, that has been the way we have been doing business around here since I have been here.

Senator COHEN. What we are trying to get at is, we look at these——

Senator HART. Relative priorities.

Senator COHEN. We look at the numbers, we look at the progress they have made, and we see a fairly bleak picture. If you are looking for trend lines it does not look very good. I think part of what Senator Hart is requesting is what portion are they spending for the seapower buildup, what are we doing and how do we match up because we are told we have lost the edge and we are told we are going to get it back. We would like to look at those numbers and those percentages. I do not know how you are going to do that.

Senator HART. I must say that is important also. My interest is allocation of resources, how important in the big picture do they see maritime and seapower capabilities versus how important we see them.

I know what those charts are going to show, I am afraid, it is just reverse of what it ought to be. We are the island nation, they are not. I am not asking to argue a case, I would just be interested in a graph that showed relative proportions of allocation of military resources.

Admiral TROST. We will take a look, and if it is readily available I will bring it along when I come back before this committee on Monday.

Senator HART. Thank you.

Admiral TROST. You will find, I think, that it will show a Soviet Navy that has gone from a coastal force 20 years ago to what they have today.

Senator HART. Precisely.

Admiral SHAPIRO. I guess it is the trend that bothers me more than anything else.

Talking about operations, as I indicated, a tenfold increase in the level of their operations. On any given day it would be [deleted] Soviet Navy or Navy-associated ships that are operating out of an area, including [deleted] ballistic missile submarines. [Deleted] ballistic missile submarines are either on patrol or close to port [deleted] in other words, could fire at a target in the continental United States.

SOVIET SHIP IN CARIBBEAN AND GULF OF MEXICO

1981 was a very impressive year. While maintaining that kind of level of effort, a number of things took place, I think you might find interesting. They made their first visit by surface ship to the Caribbean area, to Cuba, in April; the first time in about 2 years. They have made about 21 of those trips so far. Frequently, as you know, they steam around in the Gulf of Mexico as well.

They also, while all of this is going on, they were reacting to the very large NATO exercise. While that was going on, the incident down in Angola with the South African attack, they happened to have a couple of cruisers and destroyers here and they moved them on down to Luanda. It was a classic "gunboat diplomacy" move.

In Syria, at the time of the crisis in Lebanon over the missiles, the Soviets came in and conducted an [deleted] amphibious exercise with the Syrians in the Eastern Mediterranean, introducing [deleted] and they moved [deleted].

This, incidentally, was very shortly after the two Fitters were shot down in the Gulf of Sidra, so there may have been some connection these.

Then they started ship visits, the first ship visits by Soviet Men-o-War to Libyan ports in November of this past year, [deleted].

Then, during the aborted coup in the Seychelles again they were "Johnny on the spot." With a couple of ships they went down to provide air defense for the Seychelle government and have been very difficult to move out ever since.

BALTIC MANEUVERS

Then, of course, during the July–August–September time frame the exercise, part of a large general staff exercise with a big amphibious operation in the Baltic Sea that took place; the largest one that we have ever seen them conduct, [deleted] ships and craft just a few miles from the Polish border, and obviously intended—at least in part—to impress on the Polish people the error of their ways because things changed shortly thereafter.

But importantly, from our standpoint, they had taken ships from all four fleet areas and moved them into the Baltic and undertook a very impressive amphibious operation, very well coordinated. It was the largest thing we have ever seen them do.

I think the lesson here, with everything else, they indicated to us they can be very flexible and they can respond quite readily to these types of situations and actually move their naval forces in there and exert influence in the way that they have learned from us over the years.

Take a look at what is going on today. As a matter of fact, nothing has really changed. To give you an idea of what the out of area picture looks like [deleted].

As I indicated before, from the relative safety and sanctuary of their own ports and home waters there are additional *Delta's* that could be ready to fire, targeted against the continental United States. Our estimate is there are [deleted] ballistic missile submarines that are [deleted], targeted against the United States [deleted].

To give you some idea of the surface activity and air activity. Again, this is what the Atlantic area looks like, a lot of ships going back and forth to the Mediterranean from the Northern Fleet, [deleted].

They have moved into Luanda, Angola on a permanent basis, visit there almost constantly. [Deleted.]

Cuba, there are Bear *Delta's*, open ocean reconnaissance aircraft, frequently deployed down to Cuba and have conducted flights out into the Atlantic, sometimes along the east coast of the United States, on occasion actually penetrating the Adiz. They did that not too long ago to get a good look at the *Carl Vinson* that was out there on sea trials. These have been [deleted] deployments from the Northern Fleet.

Frequently, they will deploy additional aircraft to Luanda, deploy similar flights out of there.

SOVIET SHIP DEPLOYMENT

The Mediterranean. They have been in the Mediterranean since the middle 1960's, maintain 40 or 50 ships there comparable in numbers to the 6th Fleet. That builds up in crisis times like during the war in 1973 when they doubled the numbers. The commander of their Mediterranean fleet, [deleted]. As I indicated before, they actually had some aircraft operating out [deleted].

This is interesting, there is a *Romeo* class submarine calling in Algiers [deleted].

Indian Ocean, another area where their buildup has increased. They have actually operated in that area since 1968. But there has been quite a buildup since the Afghanistan war. They now operate about [deleted] ships [deleted]—there on a regular basis.

In addition to the ships that are there, again aircraft, [deleted] IL–38 Mays which are ocean surveillance maritime patrol aircraft operating either out of Ethiopia, frequently flying out there reconnoitering our carrier forces in the area.

This, incidentally, is the commander of the Soviet Indian Ocean squadron.

Another area they have moved into. In 1979 during the Chinese-Vietnamese war the Soviets moved ships down into the South China Sea to show their support for the Vietnamese. They have stayed there ever since maintaining ships in Cam Ranh Bay now and aircraft at the airfield there on a regular basis—for about a year and-a-half, Bear *Deltas*, the ocean reconnaissance-type aircraft, Bear *Foxtrot's* the antisubmarine warfare aircraft, [deleted] operating out of Cam Ranh Bay on a continuous basis.

To give you some idea of what the *Dehalak* looks like in Ethiopia, one place they have moved in, brought in a floating drydock and regularly deploy their ships in there for minor repair. The airfield, also in Ethiopia [deleted].

Aden, again taking advantage of facilities. The airfield at Aden as well, [deleted].

Then, Cam Ranh Bay, some ships stay there, provide repair services. It makes a very convenient stopping-off point for the ships that are going back and forth from the Pacific Fleet into the Indian Ocean. [Deleted.]

Senator Cohen. Admiral, what is their normal deployment mode, where are they sent and what is their radius?

Admiral Shapiro. Out of Cam Ranh, the aircraft, sir?

Senator Cohen. Yes.

Admiral Shapiro. They will fly out into the South China Sea, sometimes they reconnoiter our ships who are out there. [Deleted.]

DELIVERIES TO THIRD WORLD

Let me talk about deliveries to the Third World. Again, another area that they are very actively engaged in—the total tonnage went up last year over previous years—these are a couple of OSA's, guided missiles, PTG, and they are being delivered to Cuba, they were delivered last month. This is what the OSA looks like. This happens to be a Syrian unit. You notice they delivered some [deleted] of these things to various countries, Libya, Syria, Ethiopia, Aden, Cuba, among others.

These, as you will notice, have 25-mile range missiles.

This is a PGG, a *Nanuchka* that was delivered to Libya. Libya is receiving a lot of aid from the Soviet Union. They have also delivered similar units to India, Algeria as well.

And of course *Foxtrot* submarines. The [deleted] *Foxtrot* was delivered to Libya just last month, [deleted].

They are just building *Foxtrots* for export. These are the diesel-powered submarines I described earlier.

A second *Foxtrot* was delivered to Cuba. As of last month they had two of those delivered to them.

And of course the *Koni* class frigate, which is the largest ship they have ever exported to a Third World country. [Deleted.] This is in Cuba. [Deleted.] This is a hydrofoil craft. I showed you a photograph of the *Koni* [deleted], and a Navy deperming ship, a degausing ship that they just delivered there the other day. [Deleted.]

There has been a lot of interest in the facility down at Cien Fuegos that they have built. [Deleted.] Of course, this could be available to the Soviets at whatever time they desired to move in, I guess.

We are concerned, of course about this type of activity on their part, this delivery of these really capable ships and submarines to some of these Third World countries that occupy some very strategic locations, something that we have to be watching at all time—watching over our shoulders to see what they are up to.

What are the implications of all of this? I think it comes in three categories, one with regard to the strategic defensive posture and how they are able to project force, and then, finally, how they are utilizing their Navy in a peacetime situation.

Talking about the strategic deterrent. As I have indicated before, with the advent of the *Typhoon* particularly, the fact that they are continuing to build these, they are shifting more of their strategic force to sea, a larger percentage. More of them can remain in the sanctuary of their own home waters, they do not have to come out into the Atlantic and the Pacific where they could be more easily detected and localized, and destroyed by ASW forces.

Of course, they are on station immediately, even while in port. So, consequently, a larger number of weapons can be targeted against the United States at any given time. That certainly is major implication.

The types of ships that we are seeing them build, bigger, better, multipurpose ships; capabilities for longer cruises; capability to operate at greater distances from home waters. They are using this not only now in order to exert influence, be at the right place at the right time if you will to wave the Soviet flag and insert themselves in some of the areas.

But certainly, this type of capability in a conventional war, or for that matter in nuclear war, applied to our own sea lines of communication or against our own surface ships, is far more capable than the coastal type Navy that they had until very recently.

Then, third, what does this do to our economic situation, our sea lines of communications? Somebody made the comment that we are in fact an island nation, that probably depicts it as well as anything. The extreme reliance that we have on so many other parts of the world for strategic things—oil and other strategic minerals, they are all located at great distances from us, as are all of our allies, or most of our allies.

Consequently, the sea lines of communication are vitally critical to us for our existence, and it is interesting that the Soviets have made an effort to exert their influence—to insert themselves, if you will—in many interesting key areas of the world, manage to find themselves quite close to those concentrations of strategic minerals or sea lines of communications. This is something, of course, that bothers us greatly.

In a peacetime situation, their ability to get in there and deny us access to those minerals or those markets if they could take over those governments or exert influence on them, or in war time situations to interdict the sea lines of communication.

I guess the bottom line of all of this is as I stated at the outset, the Soviet Union has a very aggressive, very ambitious foreign policy where they would hope to extend their own economic and political influence to any other areas of the world that are critical to the United States and our allies, as I indicated in that last slide.

I think they hope to achieve this by means short of war, but at the same time is is clear to us that they are making every effort to be prepared to fight across the complete spectrum of wars, even including what they would hope to be a complete last resort, an all-out nuclear exchange.

Critical from our standpoint is the growing role that the Soviet Navy has across that spectrum, to act as an instrument of diplomacy in peace time or to fight, survive, and win an all-out nuclear war with their deterrent force, SSBN, in the event it comes to that.

FORCEFUL NAVAL DIPLOMACY

If I look back on 1981 I think it is pretty clear, clear to me certainly and my people, that the Soviet Navy has taken a very large step toward achieving that well-balanced Navy that Gorshkov talks about, to operate and support state interests both in war and peace.

It is apparent that they have been unfettered, at least to some degree, by the growing economic problems of the Soviet Union and the Warsaw Pact because they have in fact been putting this investment into their shipbuilding programs. They have managed, as a result of that, to maintain a momentum that we have seen over the years, almost an unrelenting momentum, in new ship construction programs and new weapons development, some of which you have seen today.

I feel that there is no reason to expect this momentum to drop off. They already present a very clear and present danger to us. There is no reason for us to feel that is going to drop off.

Again, all indications are that they are gearing up to play an increasingly important part—that is their Navy—in their defense strategy, and of course, in what I have referred to as "forceful naval diplomacy" in the meantime. It is a very real threat. Gorshkov has thrown down the gauntlet and I do not feel that we can afford to ignore it.

On that somber note again this year, Mr. Chairman, I stand ready to answer your questions.

[The prepared statement of Admiral Shapiro follows:]

PREPARED STATEMENT OF REAR ADM. SUMNER SHAPIRO, U.S. NAVY, DIRECTOR OF NAVAL INTELLIGENCE

DNI POSTURE STATEMENT

Thank you for the opportunity to appear before you again. It is always a pleasure and a privilege to discuss Soviet naval developments with you. To somone who has spent much of his career devoted to that subject, it is gratifying to find people like yourselves, who not only have an appreciation for the growing Soviet naval threat and the impact it can have on our national well-being, but, most importantly, are prepared to do something about it.

The last time I appeared before you, I noted the progress made by the Soviets toward their goal of a truly balanced ocean-going fleet. I concluded then that:

The evidence is most persuasive that—notwithstanding the severe economic problems they face now and in the coming years—the Soviet leadership has elected to make a major capital investment in building and maintaining a Navy and Merchant Marine that can project Soviet influence throughout the world. This maritime power represents a direct and growing challenge to the economic, political and strategic interests of the United States and our allies.

As I look back over the intervening year, I find no reason to believe the Soviets have wavered from that goal. Quite the contrary. All the evidence—their weapons developmental efforts, their building programs, and the expanding scope of their operations in 1981—reinforces our earlier conclusions as to their maritime ambitions. There can be little doubt that, despite severe and growing economic problems within the Warsaw Pact, Fleet Admiral Gorshkov continues to receive substantial support for the balanced fleet he seeks to create. With each passing year, it becomes more evident that not only is this an achievable goal, but that it is just over the horizon and closing fast.

The reasons are fairly obvious. Notwithstanding the fact that the Soviet Union is primarily a land power, many of its critical interests are overseas. Theirs is a very ambitious and aggressive foreign policy that seeks to extend Soviet economic and political influence in many strategic areas of the world, both directly and indirectly through surrogates such as Cuba, Libya, Vietnam and Ethiopia. They would hope to achieve their foreign policy goals by means short of war, and it is clear they visualize Soviet seapower—naval and merchant—as an important instrument for neutralizing or replacing U.S. influence, sowing doubt and creating dissension among our allies, and jeopardizing our economic future by restricting our access to world markets and vital raw materials. If necessary, however, they are also prepared to fight across the full spectrum of limited and general war scenarios, including an all-out nuclear exchange which they hope to survive and win. In all such war scenarios, the Soviet Navy plays an increasingly important role. The type of navy they are building is designed with these various contingencies and missions in mind. Let us look then at the evidence for the year 1981, to see how they are progressing.

With regard to naval construction, actual production was somewhat less than in 1980—18 submarines and major combatants, compared to [deleted] units which included 6 new classes. As such, 1981 can be characterized as a period in which the Soviets were catching their breath following a spectacular year. I expect them to pick up the pace again this year. [Deleted], including the first unit of another new large class of cruisers, [deleted].

Of course, ship production figures don't tell the whole story. During 1981, the first units of the ship classes introduced in 1980 completed initial sea trials and entered the active fleet. All are now in series production. Even more importantly, significant progress was made in the testing and evaluation of new naval missile systems such as the SS-NX-20 SLBM for the Typhoon submarine and two new cruise missiles, [deleted]. In short, 1981 was a year of continued momentum and important advances in the growth of Soviet naval warfighting capabilities.

Let me describe some of the milestones in the principal new classes of Soviet warships and submarines and the weapons systems they will carry.

The Soviets will soon launch the fourth and probably final *Kiev*-class carrier, to add to their increasingly powerful major combatant force. The third ship of this class, the *Novorossiysk*, has just commenced sea trials. When these units join *Kiev* and *Minsk* in the fleet, they will further expand Soviet capabilities for task group operations both on the high seas and littoral waters.

Moreover, there are continuing indications the Soviets intend to build a modern conventional take-off and landing aircraft carrier. [Deleted] indicators lead us to believe that work has already begun on such a carrier program. A 50,000 to 70,000 ton, probably nuclear powered, carrier is expected to be operational by the end of the decade.

The cruiser *Kirov*, the Soviets' first nuclear-power surface warship, and [deleted] the largest non-aviation warship built by any nation since World War II, completed sea trials in 1981, during which most of its weapons and systems were successfully tested and evaluated. The second ship of this class was launched [deleted] last year and is currently fitting-out. Sea trials will probably occur in 1983.

The primary weapon systems of *Kirov* are new-generation, highly-sophisticated long range antiship and surface-to-air missiles as well as modern ASW weaponry. *Kirov*'s SS–N–19 anti-ship cruise missiles (she carriers 20) are stored and fired from below-decks out to a range of more than 240 nm [deleted] . Its SA–N–16 surface-to-air missiles are likewise stored and vertically launched from below-decks in rapid-fire succession from 12 [deleted] and controlled by [deleted] capable fire control radars. *Kirov* also carrys the first reloadable SS–N–14 ASW system, as well as new bow mounted and variable depth sonars. *Kirov* will significantly improve Soviet fleet defenses against attack from Western aircraft or missiles and adds greatly to their capabilities to strike Western ships. This impressive ship combines in one multipurpose platform the latest Soviet technology in air defense, antiship strike, ASW and command and control.

In 1981, the Soviets also completed initial sea trials of the new *Sovremennyy* guided missile destroyer. *Sovremennyy's* two twin 130-mm gun mounts are the largest naval guns build into a Soviet ship since the late 1950s. A new [deleted] antiship cruise missile, [deleted] . *Sovremennyy* will be fully capable of supporting amphibous assaults and generally opposing Western surface forces in all ocean areas. Notably, it is the first major Soviet combatant since 1970 built without significant ASW weaponry. [deleted] More are under construction [deleted].

The first of the *Udaloy* class guided missile destroyers also completed initial sea trials last year and transferred to the Northern Fleet. The second ship of this class is undergoing sea trials, and [deleted] more are under construction. [Deleted]. Primarily an ASW ship, *Udaloy* appears designed to succeed previous similar classes as the main ASW platform within an integrated Soviet task force. *Udaloy* carries the new Helix ASW helicopter, which could significantly improve Soviet tactical ASW capabilities.

Finally in 1981, the newest major combatant class, the *Black-Com* I guided missile cruiser, neared completion as it underwent the final stages of fitting out. It will probably commence sea trials this year. [deleted] . Conventionally powered, about half the tonnage of *Kirov*, it incorporates similar anti-air warfare weapons and sensors. It also carries long-range cruise missiles, the SS–N–12, with a range of about 300 nm Like *Kirov*, the *Black-Com* I will probably function as a command ship, in addition to adding enhanced air defense and surface strike capabilities to a Soviet battle group.

It is a most impressive surface ship construction program the Soviets have undertaken. Enjoying at least equal priority, and no less impressive, is their submarine building program.

In 1981, the Soviets completed initial sea trials of the *Typhoon* SSBN, and there were several [deleted] successful launches of its missile system, the Mirv-ed SS–NX–20. We expect production [deleted] through this decade, [deleted] . Like earlier *Delta* class SSBNs which continue to roll off the production line, *Typhoon* will be capable of firing its missiles and reaching most targets in the continental United States without leaving port or the sanctuary of nearby home waters. The advent of *Typhoon* represents a major addition to the Soviets' strategic nuclear arsenal.

Similarly, the appearance of the very large *Oscar* class cruise missile submarine, the first of which began operating in 1981, foreshadows a heightened threat to surface targets in coming years. We expect the Soviets to produce [deleted] *Oscar* [deleted]. *Oscar* carries 24 long-range SS–N–19 cruise missiles, the same system found on the *Kirov* nuclear-powered cruiser. *Oscar*'s missiles can be launched while submerged and are capable of hitting targets more than 240 nm away. This missile system [deleted] is now operational. *Oscar* will, in our judgment, constitute a very potent threat to Allied ships on the high seas and a determined answer to any effort by surface ships to enter Soviet home waters.

Last year, the Soviets added another *Alfa* class nuclear attack submarine to [deleted] already operational in the Northern Fleet [deleted]. *Alfa* is the fastest submarine in operation and has a titanium alloy hull, giving it the potential to operate deeper than any other attack submarine. Construction of the *Alfa* Class [deleted] is expected [deleted].

Construction of the Soviets' *Victor* class nuclear attack submarine also continued, [deleted].

In sum, Moscow's major warship and submarine construction programs in 1981 continued at a robust rate. Simultaneously, the Soviet Navy also expanded other components of its surface and aviation forces.

The Soviets continued to upgrade their growing amphibious force in 1981. The second of the *Ivan Rogov* class large amphibious assault ships is nearing completion, which we expect probably late this year. *Rogov* can carry a battalion landing team of over 500 men, two LEBED air cushion vehicles, and a combination of four Hormone C utility helicopters and/or the amphibious assault version of the new HELIX helicopter.

Also, the Soviets took delivery last year of the first of the new series of *Ropucha*-class tank landing ships, with another three under construction in a Polish shipyard.

Combined with the increasing capability for naval gunfire support from its new surface ships and improved underway replenishment and sea-based tactical air, the new amphibious ships represent a commitment to improve the Soviet Navy's ability to land troops equipment at distant trouble spots.

Enhancing this ability further is the ever growing Soviet merchant fleet, which now includes over 40 sophisticated roll on-roll off ships particularly well-suited for amphibious landing operations, and some 600 extended range, high speed, dry cargo ships with booms capable of lifting armored vehicles in an amphibious support role. Many Soviet merchant ships are crewed by naval reservists, equipped with extensive naval related communications facilities, and incorporate military related design features such as damage control centers, armoured cableways, CBR protection, and IFF systems. The Soviet merchant fleet is clearly "on call" for rapid response military duties. This aspect of Soviet seapower continues to expand both quantitatively and qualitatively.

Soviet Naval Aviation in 1981 continued to receive new Backfire bombers, [deleted]. These modern aircraft materially extend the range and scope of Soviet capabilities to strike surface forces, mine and bomb ports and harbors, and provide support to theater operations. The Soviet Navy's average yearly allocation of [deleted] Backfires is about the same number received by Soviet air forces, underscoring the importance Moscow accords to its naval air missions.

Overall then, the shipbuilding effort by the end of 1981 has resulted in a Soviet Navy with 3 *Kiev* carriers, [deleted] other major surface combatants, and [deleted] submarines, [deleted]. This does not include hundreds of additional minor surface units intended primarily for patrolling and defending the Soviet Union's littoral. We expect the number of surface ships to remain relatively stable over the next decade and the number of submarines to decrease somewhat as new and more technically sophisticated units replace older ones.

Just as impressive as the ships produced are the immense capital investments the Soviets continue to make in their naval shipyards. Five major yards build submarines, eight others build surface combatants, and several lesser yards produce auxiliaries and minor combatants. The Soviets continued in 1981 to modernize and upgrade facilities and equipment at these yards. In stark contrast to their many outdated civilian plants, Soviet shipyards use advanced computer-controlled manufacturing equipment and other highly sophisticated construction techniques.

To give you an idea of the scale of their shipbuilding ambitions, consider the Severodvinsk shipyard in the Northern Fleet area. The largest shipyard in the world, it has accounted for half of all Soviet nuclear submarines built in the last dozen years, including the new *Oscar* and *Typhoon*.

[Deleted.] Superimposed on downtown Washington, the Severodvinsk shipyard would stretch from here (the Capitol) to Memorial Bridge. [Deleted.]

And remember, Severodvinsk is only one of 13 major submarine and surface combatant shipyards.

I emphasize this because it underscores vividly the effort the Soviets are making to build and maintain a balanced, ocean-going Navy. In a civilian economy starved for capital investment and faced with other growing domestic economic dilemmas, the Kremlin has lavished funds on warship-building shipyards, coupled with huge operating expenses to keep these underused facilities open.

While 1981 was an important year for ship construction, it was also important for ship operations. The Soviets again showed their readiness to deploy major naval forces to specific global trouble spots, and generally to project naval power with substantial forces continuously deployed in the Mediterranean and Indian Ocean areas.

During the year, "State interests" called on the Soviet Navy last spring to send a cruiser and two frigates to the Caribbean, the first such deployment in nearly two years. In July, while the Mideast was still unusually tense over Syrian missiles in Lebanon, the Soviet Navy conducted [deleted] joint amphibious exercise with the

Syrian Navy in the Eastern Mediterranean [deleted]. In August and September, the Soviets sent a cruiser, two frigates, and at least one submarine on a rare deployment along the United States west coast and through the Hawaiian Islands, as a vivid demonstration of the gobal reach of their maritime power.

[Deleted] Soviet naval [deleted] aircraft made their first operational deployment to Libya. This was more than coincidental with heightened Libyan-U.S. tensions, [deleted].

[Deleted] in November, the Soviets sent a cruiser and frigate to the Seychelle Islands, at the request of its President, ostensibly to "provide anti-aircraft protection" following an abortive coup attempt against the Seychelles government.

Probably most dramatic last year, however, was the large amphibious exercise in the Eastern Baltic, conducted within the context of a major joint-forces exercise named Zapad 1981. Involving [deleted] men and [deleted] ships and landing craft, this was the largest amphibious, [deleted] exercise ever observed in the Soviet Union.

Politically, it was a not-too-subtle demonstration to the Polish people of Soviet military strength and resolve. It received heavy coverage on Warsaw Pact television, and included a major amphibious landing at a site only a few miles from Poland, along with numerous set-piece demonstrations to impress foreign observers. It was a stark reminder that the Soviet Union, which has intervened in Eastern Europe before, can do so again at will.

Militarily, Zapad 1981 assembled the largest grouping of warships in the Baltic since World War II, and for the first time included ships from all four Soviet fleets. Major units included the aircraft carrier *Kiev*, the helicopter cruiser Leningrad, and the amphibious assault ship *Ivan Rogov*. The exercise also featured extensive use of air-cushioned landing vehicles, the [deleted] application of carrier-based VTOL aircraft [deleted] and the use of roll-on/roll-off merchant ships in the landings. We believe that one of the purposes of this unusual gathering of forces was to test planning concepts for amphibious operations in distant areas.

As the Soviet Navy sustained its long-range deployments, it continued to make use of overseas facilities in numerous Third World countries. During 1981, the periodic deployment of Soviet reconnaissance aircraft to Cuba and Angola increased markedly and in Cuba may become continuous. In Africa, Luanda, Angola, replaced Conakry, Guinea, as the main support facility for the Soviets' West African naval contingent.

Their principal overseas facilities, however, are in Ethiopia, South Yemen and Vietnam. Soviet naval reconnaissance and ASW aircraft deployed to fields in Ethiopia and Aden throughout 1981 and regularly flew surveillance missions against U.S. and allied naval forces in the Indian Ocean. The Soviets maintain a nearly continuous naval presence at Dahalak Island, Ethiopia. [Deleted.] It is here the Soviets perform the more complex maintenance required to sustain extended Indian Ocean deployments. Aden serves as a location for less involved maintenance and crew rest visits by Soviet ships, but more importantly is the site for [deleted] facilities for enhancing overall coordination of Soviet Indian Ocean naval operations.

Another facility which they use regularly is at Cam Ranh Bay, Vietnam. This U.S.-built complex permits the Soviet Navy to operate combatants, auxiliaries, merchant ships, and reconnaissance and ASW aircraft continuously. Soviet naval forces and aircraft operating from this strategic location are in a position to threaten the vital sea lanes to the Indian Ocean, as well as U.S. forces in the Philippines and those operating in the South China Sea. The Soviets enjoy near-autonomy at Cam Ranh. Because of the Chinese threat to Vietnam, Hanoi leaders seem willing to accept this large presence, which they must regard as a valuable expression of support. It has served Soviet interests well; most vividly when the carrier Minsk deployed from Cam Ranh Bay to the Gulf of Thailand in late 1980 to pressure Bangkok on the Kampuchean issue. Moreover, control over this former U.S. base is a strong symbol to other countries of Soviet ascendency in the region.

An additional important factor in the Soviet power projection equation is the delivery of arms to Third World clients. In 1981 such deliveries [deleted]—up slightly from 1980. And there were some interesting changes in arms delivery priorities. Cuba replaced Vietnam as the number one recipient of Soviet arms; Libya, Iraq, and Syria also moved ahead of Vietnam. The Soviets continued to deliver very sophisticated naval equipment to selected clients. For example, [deleted], Cuba has received a new construction [deleted] frigate and [deleted] attack boats armed with [deleted] antiship cruise missile; Libya recived [deleted] diesel submarines [deleted]; and Ethiopia and South Yeman each received [deleted]. The expanding naval capabilities of these strategically positioned Soviet client states is a disturbing trend which is likely to continue, if not accelerate.

These Soviet naval developments which I have described have several important implications for the United States.

On the strategic front, the steady modernization and improvement of the Soviet ballistic missile submarine force means that not only can more targets throughout the continental United States be covered continuously by Soviet submarine-launched ballistic missiles, but that the launching platforms, *Delta* and *Typhoon* SSBNs, are becoming less vulnerable to detection and neutralization. These units are replacing older Yankee class SSBNs which must make long transits to reach station in the Northwest Atlantic and Northeast Pacific. The increased range of their missiles allows these new Soviet submarines to launch from the relative safety of home waters and even make use of waters under the Arctic ice cap. Also, Mirved SLBMs enable the Soviets to move a greater percentage of their strategic capability to Sea.

Equally significant have been the improving sea control capabilities of surface and submarine forces to protect both the homeland and strategic missile submarines in adjacent waters. Operating out of four major fleet areas, the Soviets strive to control the Atlantic north of the Greenland/Iceland/United Kingdom gap, the Baltic, the Black Sea, the Sea of Japan, the Sea of Okhotsk, and perhaps even the Eastern Mediterranean. In a war, they would hope to maintain control in these and adjacent areas further to seaward and to deny freedom of operation to enemy navies.

This penchant for sea control of nearby waters is not new for the Soviet Navy. What is increasingly apparent, however, is their growing inclination to take the battle to more distant seas and shores. The numbers and quality of their surface warships and amphibious ships exceed the Soviets' needs to defend the homeland [deleted].

Plainly, the Soviet naval threat in a general war is formidable. I also think we should be equally concerned about the growing naval threat in a limited war or even in peacetime.

The Soviets have taken to heart Oliver Cromwell's axion: "A man-of-war is the best ambassador." In the past quarter-century, the Soviet Navy has become an increasingly important agent of Soviet diplomacy. Its expanding surface fleet enabled the Soviets to move from being a passive spectator during the 1956 Suez crisis, to a deterrent force in the 1967 and 1973 Arab-Israeli wars, to a more active participant in the 1976 Angolan and the 1977–78 Ethiopian-Somalian conflicts. Free to roam international waters, the new generations of large Soviet warships with sophisticated weapon systems are a flexible, tangible, and convincing instrument of state policy.

Besides its enhanced political power projection capabilities and influence, the Soviet Navy poses a growing threat to the free flow of Western trade. In wartime, this increasingly capable array of naval and air forces could jeopardize military supplies and material in our most vital sea lines of communication. The Soviets are well aware of our dependence on the sea for survival—that we are an island nation, with sources of critical materials and our allies across large bodies of water. As the Soviets consider more seriously the possibility of a prolonged NATO-Warsaw Pact conflict limited to conventional warfare, they have emphasized this interdiction role more.

Moreover, we must regard this capability as a potential threat to Western economies in both peacetime and during third world crises. Consider our own vulnerability to disruptions. Twice in the last decade, we have seen the effects of relatively modest disruptions in imported oil supplies. A more decisive event could be devastating. For example, a successful naval closure of the Strait of Hormuz—in connection, say, with a Soviet military intervention in Iran—would shut off 15 million barrels of oil a day to the West, representing over 60 percent of U.S., Western European, and Japanese imports and causing a yearly loss of nearly a half-trillion dollars from our gross national product and over one-and-a-half trillion dollars from combined Western economies.

Disruption of sea lines would cause the loss of other important raw materials. The U.S. Commerce Department has estimated that we depend on foreign sources for all or part of 69 of the 72 raw materials vital to our high-technology society. For example, titanium is essential to our aerospace industry and during a war available supplies would be used up rapidly. Yet fully 100 percent of our titanium is imported, mostly from Japan and Australia, and thereby vulnerable to disruption by the Soviet Navy. Other such vulnerable minerals include bauxite, tin, zinc, chromium, nickel, and cobalt.

In a world of such intricate trade and economic interdependence, we must consider the possibility that the Soviet Navy will become an instrument of disruption. It could help persuade or force Third World countries to cut off supplies to the West, promote local wars that shut down resource development projects that provide us minerals, help divide us from our allies as we scramble for new supplies, or even directly impose naval blockades or land forces ashore. These actions may seem implausible today, but may not be tomorrow.

As I stated at the outset, the USSR is aggressively pursuing an ambitious foreign policy that seeks to extend Soviet economic and political influence to many areas of the world critically important to the United States and our allies. The Soviets would hope to achieve these expansionist aims by means short of war, and in this respect they are engaging more and more in what might be described as forceful naval diplomacy. At the same time, they prepare assiduously to fight across the full spectrum of wartime scenarios, including what they view as the last resort—a confrontation between NATO and the Warsaw Pact that escalates to an all-out nuclear exchange. Their plans to fight, survive and win such a confrontation envision an increasingly important role for the Soviet Navy.

The Navy that Gorshkov is building is designed with all these contingencies and missions in mind—from the peacetime employment of naval forces as an instrument of diplomacy, to reliance on submarine-launched ballistic missiles as a critical element of their war-winning nuclear strategy. In looking back over the past year, it is clear the Soviet Navy has taken one more step toward achieving this goal of a balanced ocean-going fleet. Apparently unfettered by growing economic problems within the Warsaw Pact, the Soviet Navy continues to sustain the unrelenting momentum of new ship and missile programs aimed at creating a force capable of responding to the full range of wartime and peacetime tasks. We have no reason to expect this momentum to falter. The trends of the past and the evidence at hand suggest that this momentum will continue and perhaps even grow.

The implications of this unrelenting buildup of Soviet seapower should be obvious. The Soviet Navy even today presents a clear and present threat to the vital economic, political and strategic interests of the US and our allies. Today that Navy is deployed world wide, posing a direct challenge to US prestige and influence in areas critical to our national survival. It is gearing up to play an increasingly important role in Soviet defense strategy. It represents a very real and growing challenge that we cannot afford to ignore.

Senator COHEN. Thank you very much, Admiral.

We will abide by the 5-minute rule—let us start on that basis, at least.

CHEMICAL WARFARE

You have not talked about a chemical warfare threat as far as it pertains to the Navy. I had a briefing earlier today with respect to the Army's CW upgrade. What do you anticipate in the way of chemical warfare scenarios for the Navy?

Admiral SHAPIRO. We have seen in all of these new construction programs—for that matter, going back over several years, in their combatants—great attention to air locks, airtight systems, ventilation systems, wash-down stations and other sanitation stations in their ships, including their amphibious ships—another indication of the great importance that they assign to chemical warfare.

Senator COHEN. What I am asking is, what are we doing about it?

Admiral TROST. I can give you a general answer, Senator Cohen. I think some of the witnesses who will follow me next week will have more specifics on what we are doing shipbuilding wise. In recognition of the threat at the present time, what the Navy has done is look at countermeasures, specifically oriented toward the protection of the individual—masks, protective clothing, and proper filter systems in our ships.

Our surface combatants, with some very few exceptions, cannot be buttoned up absolutely airtight and continue to operate. We have looked at the design of so-called citadel spaces in new construction ships, starting with the DDG-51 class, and in addition are investigating the complexity and cost of backfitting certain of our large ships such as the LHA's with the capability to exclude chemical and biological organisms from the ships themselves.

Senator COHEN. We have a limited capability?

Admiral TROST. We have a limited capability at the present time, that is correct.

SOVIET WEAKNESSES

Senator COHEN. Admiral Shapiro, you have talked about a number of the growing strengths of the Soviet Union as far as their seapower is concerned. Tell us some of the weaknesses that still exist, and what you regard as the major deficiencies that they are either currently unable to overcome or perhaps even unlikely to overcome as far as compared to our Navy.

Admiral SHAPIRO. They certainly have basic deficiencies that they are not likely to overcome, geography for one. When you look at the map at their location, the way they have to come through areas that are controlled by us or our friends, or at least where they are to some extent running the gauntlet; the distances they have to come in order to extend their operations. I think that probably is their greatest deficiency and real shortcoming.

They would certainly like to be able to overcome that. I think they try to do that by branching out into other areas and gaining access to operating bases outside of the Soviet Union.

Sustainability—I do not believe they have that. Certainly, what you are seeing here is ability to operate on a relatively short-term basis at this point. They still have limitations in their replenishment capabilities and logistics. This is another area where they are working, trying hard to overcome that.

In the open ocean they have a serious shortcoming in their ability to detect, locate, and certainly to localize submarines in the open ocean environment. It does not exist. Certainly, in a tactical environment they do better closer to home or restricted areas. On an open-ocean basis, that is a serious deficiency.

From the amphibious standpoint they do have a growing capability. [Deleted.] But again, we are talking about the short-haul type of operation at this time, nothing comparable to the sorts of things that we did in the Pacific in World War II. That is another area they are trying to improve. Right now it is in fact more of an extension of the Army.

I think those are probably the major areas.

There are two other areas I might mention, sir. First, of course is sea-based tactical air, right now constrained to the range of their land-based air. But again, an area where they obviously are going to make strides. We see that first in the *Kiev*, but it will be far more significant when they have high-performance aircraft and their CTOL aircraft carrier by the end of this decade.

I guess the other area that always comes to my mind, we have always banked on a technological advantage, a very significant one. When I see some of the weapon systems that are coming out and the other developments, see how fast they move, I am impressed—I am frightened by the speed with which they are closing that gap.

There are certain areas, still, where we maintain a lead. We are going to lose it if we do not do a better job of keeping our own secrets, our own technology. This is, I am sure you are aware, you have heard enough about it, an area where they are concentrating very heavily, trying to buy, steal, borrow technology from us and our allies around the world. Unfortunately, they are very successful in that.

Senator **Cohen**. You mentioned geography as one thing they cannot overcome. It seems to me from the strategic point of view the *Delta* gives them a substantial step toward overcoming that difficulty.

Admiral **Shapiro**. That, sir, would of course be in a nuclear exchange, they would have that there as a last resort, if you will. But in a conventional war they want to operate in a limited or contingency mode. They still have to get away from their home ports, which are long distances.

Senator **Cohen**. But they seem to be gaining access to more and more bases that you talked about, such as Aden.

Admiral **Shapiro**. Yes, sir.

Senator **Cohen**. You also talked about Cuba, access to bases in the Mediterranean, and Cam Ranh. I take it all of these are extensions of their power, are they not?

Admiral **Shapiro**. Yes, sir.

SOVIET AMPHIBIOUS CAPABILITY

Senator **Cohen**. Do you also conclude that by virtue of the size and capability of their seapower, they are going to be able to intimidate a lot of other nations into giving them access, referring to the amphibious assault capability that they are developing?

I have not seen anything that we have yet that would compare. The LCACs are still not really operational or on the production line. We have some, but nothing that is in full-scale production that could compete with that; do we?

Admiral **Trost**. We just started, we just signed the contract for three production LCACs. So, we have a ways to go.

Admiral **Shapiro**. I have been watching them very closely for more years than I like to admit—like 25 now. I have been impressed by the fact that they do a very good job, I think, of impressing on people their capabilities by an indirect threat, if you will. They work extemely hard to not necessarily replace us but neutralize our influence in key areas.

This amphibious capability, I think, is a good case in point. When they first came out and reinstituted the naval infantry in the early 1960's, they did this with a great flair, a lot of publicity, they ran a lot of exercises. They really did not have that much of a capability. But it certainly had an impact on the Greeks and the Turks.

At that time, of course, they did not have enough to back them up. But as they build a stronger navy, stronger armed forces, I think that people are going to be intimidated by them. If they do not go over to their side, I would be more concerned about their being neutralized. That, of course, accomplishes just as much for the Soviets.

Admiral **Trost**. I wonder if I might add one other comment to that. Watching the impact of Soviet presence in Cam Ranh Bay as it built up over the last several years, it was interesting that the Soviet used that presence as an attempt to get a broader foothold to coerce some of the countries out there, specifically the government of Singapore, into providing greater access for combatants for repair and resupply.

The fact that they were turned down was based by the Singaporians on the fact that we had demonstrated an indication of sufficient resolve to remain in that area as a major power. So, we are very much a factor, "we" this country, in what success the Soviets can have.

GREEK GOVERNMENT ATTITUDE TOWARD SOVIETS

Senator **Cohen**. What is your assessment of the Greek Government's attitude toward the Soviets as far as providing them access to repair opportunities at their bases?

Admiral **Shapiro**. They are continuing, of course, I think, to negotiate and push for that. I think it is going to be very difficult. It is my own assessment it will be very difficult for the Greeks to continue to turn that off from a commercial standpoint.

We see them trying in many places. That is the way they get in first. Their fishing fleets are either going to operate with them or go in there for support, a merchant ship for repair. They bring money, they bring resources, whatever. Then once, of course, they get in there then they try to bring in auxiliaries and the next thing you know, there is a naval presence there. We see that in the Canary Islands, now they are trying it in Greece; we see it in Madagascar, we have seen it in the Seychelles, just about any place you want to look, particularly if it happens to be in a strategic location or for some other reason they find it in their interest to try to insert themselves.

SOVIET MINE THREAT

Senator **Cohen**. You have not discussed the threat posed by Soviet mine warfare. I know we have a big item in our budget to build several U.S. mine countermeasure ships. What kind of a threat do they pose?

Admiral **Shapiro**. A very large supply of mines, modern and for that matter, they do not throw anything away. They have them left over from World War II and probably before. They have a very large supply of both unsophisticated and sophisticated types, and then of course a number of ways of laying mines—whether it be by surface ship [deleted], by air. [Deleted.] And then, a very significant effort and capability for laying mines by submarine.

We know that this is a very important facet, both defensive mining and offensive mining, from their standpoint.

Senator **Cohen**. What countermeasures capability do they have?

Admiral **Shapiro**. Again, not only surface ship minesweepers, but we have seen [deleted]. They have that capability. As a matter of fact, they demonstrated that during this exercise in the Baltic [deleted]. So, it is very high on their list.

Senator **Cohen**. What is your assessment of the future reliability of our access to the facilities at Subic Bay?

Admiral **Shapiro**. I would like to believe that they will not manage to have an inroad there. I am inclined to think that Admiral Trost, probably, having just come from there, might be able to handle that better.

Admiral **Trost**. The key, of course, is the political stability of the government—speaking both for the existing government and whatever type or form of government and leadership follows President Marcos.

I think as long as the current government remains in power and as long as the current political situation remains as it is—which means relatively stable, certainly not strongly stable—and as long as the revolutionary forces in the south of the Philippines are no more successful; and if the economic conditions on the Island of Luzan remain reasonably stable, then there is a good likelihood of our continued access.

But we are certainly there at the political whim of the Government of the Philippines. Right now that is pretty favorable.

Senator **Cohen**. Senator Byrd?

LAMPS III

Senator **Byrd**. The LAMPS III program has been underway for a considerable number of years. It has developed into a very costly program. Can you provide us with your assessment of Soviet capability in the late 1980's and 1990's if we would not follow through with LAMPS III?

Admiral **Trost**. LAMPS III is the only program we have coming which, when married with the antisubmarine warfare frigate and destroyer-type ships, has a capability to get out into the outer ASW zones away from the ships, both in reaction to precisely locating submarine contacts and to kill contacts before they get, for example, within cruise missile launching range.

Without that capability, we take away much of the weapons system that was designed into ships like the FFG-7 class frigate, for example which has no intermediate or long-range, ASW, kill capability without LAMPS. That ship was designed to operate with the LAMPS III helicopter and with the towed array sonar. If you take away either one of those two you have markedly decimated the capability of that ship.

A similar statement could be made even for those other ASW platforms we have which have a more capable hull-mounted sonar. It is simply the executor, if you will, of both the search-and-attack phase for most of our current ASW platforms. It also provides an ancillary benefit in being able to provide an over-the-horizon search, identification, and targeting capability. So, the impact would be considerable.

F-14 ENGINE SHORTCOMINGS

Senator **Byrd**. Navy's original plan for the F-14 aircraft was a better engine after the first 50 or so aircraft. This has not materialized. I understand that the Navy-Libyan air encounter last August brought to focus the shortcomings of the F-14 engine.

I also understand that there is a draft letter in the Navy Department whereby the fleet commanders state a requirement for a better engine in the F-14.

Would you give us your assessment of fleet air defense in future years with and without a better engine in the F-14?

Admiral TROST. I think, Senator Byrd, I would have to defer a specific answer to that question to Vice Admiral McDonald when he comes over next week. The current Navy program for the F-14 engines has been the necessary upgrades to solve both the reliability as well as component life problems with that engine, which have been demonstrated as the aircraft has been in the fleet.

The engine currently, with the backfit kits going in, is estimated to be a highly reliable engine. The cost of reengining with a new engine is substantial. I do not know precisely what the plan might be. I can provide that for the record or defer it to Admiral McDonald's testimony.

Senator BYRD. Why not just supply it for the record, that would be satisfactory.

[The information follows:]

F-14 REENGINING PLAN

It is true that the engines currently in the F-14 (Pratt and Whitney TF-30 P414A) were not intended for the main body of the F-14 force. Problems early in development of the follow-on engine (Pratt and Whitney F-401) and affordability caused termination of that effort, and the decision was made to outfit all F-14's with the TF-30.

There is no plan to re-engine the F-14 and the current Five Year Plan contains no money for a new engine, however in 1981 and 1982 we conducted limited flight tests which examined General Electric F-101 engines in an F-14. These tests were promising but were not complete enough to provide sufficient data to evaluate the suitability of the new engines. We will decide in the near future whether or not to continue to evaluate a new engine for the F-14.

Senator BYRD. I have favored normalizing our relations with South Africa for a number of years. I have also asked for some sort of alliance which would include South Africa, Australia, New Zealand, Brazil, Argentina, the United States, and others.

The purpose, of course, would be to improve our military and naval capabilities in these areas. Do you feel that normalization and some sort of an association would provide us with greater naval capabilities?

Senator COHEN. Let the record show both witnesses are smiling. [Laughter.]

Admiral TROST. I was going to give the most honest answer I could and say, I suspect I should turn to either the people in the Office of the Secretary of Defense who deal in international policy, or the State Department, to respond.

From a Navy standpoint, any access to those friendly parts of the world is certainly beneficial to our overall capability and to our ability to operate with the forces of friendly countries in those areas. I think perhaps I will just leave it at that.

IMPORTANCE OF SOUTHERN HEMISPHERE

Admiral SHAPIRO. I think I may add, I may volunteer, you must have noticed, Senator Byrd, on one of the graphics I showed you, our great reliance upon the Southern Hemisphere for our critical materials and sea lines of communications. That is a graphic demonstration of just how important that area, that part of the world is to us.

Senator **Byrd**. You regard that part of the world, namely Southern Africa, as being very important.

Admiral **Shapiro**. The whole Southern Hemisphere.

Admiral **Trost**. If you look at the preponderance of sea lines of communications, delivering oil and strategic materials from the African Continent and from the Persian Gulf region around to the United States and to Europe, you can see that we are highly dependent—both in this country and in Europe—on free access throughout that area.

If you then note those red dots which demonstrated the Soviet areas of access and influence, they are very, very carefully selected, it would appear, to sit astride those lines of communications such that with minimal effort they could disrupt our capability to keep them open.

So, anything that we had which would enhance our access to those areas would certainly be very beneficial to our capability.

Senator **Byrd**. Thank you. I may have some other questions.

Senator **Cohen**. Senator Hart?

SOVIET ALL-AROUND NAVY

Senator **Hart**. Admiral, speaking in the most general of terms, are the Soviets primarily a submarine navy or a surface navy?

Admiral **Shapiro**. I think both, Senator Hart. I would say they certainly have concentrated until very recently on building large numbers of submarines, but they also were building large numbers of coastal defense ships, smaller ships.

What we are seeing now, and I think what impresses us most, is the development of these larger surface combatants, multipurpose, multimission long-range type ships. That makes it quite obvious to us that their plans for extending their area of operations lie in those ships as well, that is in the large surface ships.

I think, although it is a submarine navy to the extent that they have built a large submarine force and it plays a very important part in their defense strategy, they depend very heavily upon that surface force and plan to depend upon it even more heavily in the future.

Senator **Hart**. Is their buildup of surface combatants at the expense of their submarines?

Admiral **Shapiro**. No, sir. They seem to be able to do both. If you look at the total numbers of ships that have been delivered per year for, let us say, the last 10 years, what is not generally known is that the number of the major surface combatants is about the same as the deliveries of submarines. [Deleted.]

SOVIET MISSION PRIORITY

Senator **Hart**. How would you list the missions of the Soviet Navy in order of priority?

Admiral **Shapiro**. I think of course paramount in their view is a defensive mission, to be able to protect the Soviet Union and be able to deliver—as far as the Navy is concerned—a blow against the enemy shore. That is what they are talking about when they are talking about the ballistic missile submarine force. And then to be able to project power, to extend their defensive perimeters to be able to engage the enemy at sea, again to defend the Soviet Union.

But ultimately, I think, to be able to project their influence, whether it is in a contingency situation or peacetime situation, to areas that are critical to their national interest.

I think in many respects Gorshkov's statement when he talks about a well-balanced Navy, how he describes the missions it is not laid out the usual way missions or functions are laid out. I think he covers it in general terms about as well as anybody, not only to fight in a nuclear war, but fight in a conventional war as well, and to be able to support state interests in times of peace.

The types of ships that they are building are capable of doing that across the board. They are not one-mission type ships, they are not built for one purpose but in fact they do support those three major mission areas.

SOVIET PACIFIC BUILDUP

Senator **Hart**. How do you interpret the buildup of the Soviet presence in the Pacific?

Admiral **Shapiro**. I think this is another area, sir, where they have interests. They have always fallen behind in their development efforts because it is so far from the centers of production and centers of government. They recognize that this is another area where they have an opportunity to exert their influence and replace ours.

I think the case in point is Cam Ranh Bay, the fact that they have moved into Vietnam and have, in the eyes of many perhaps, replaced us. They certainly have shown an ascendency in the area and that fact has not been lost on the countries in that area whom I have visited, and have gotten the same types of comments that Admiral Trost did about the presence of the Soviet Union and what does that mean insofar as the support they could expect to have from the United States.

Senator **Hart**. In terms of surveillance and acquisition of our ships, how heavily do the Soviets rely on electronic emissions from our ships and fleet?

Admiral **Shapiro**. They use a number of means, of course, trying to keep track of our ships. Their ocean surveillance system that we referred to [deleted]. They have developed, as you are aware, [deleted].

Much of it is dependent upon their DF net, direction finding net and their electronic satellites which, of course, depend upon active transmissions from us.

Of course, that is only part of their total collection effort. They have intelligence collectors, these AGIs, [deleted] that sit off our ports, naval bases. They shadow us around, shadow our carriers as much as they can, tattle-tale type operations.

Of course, they probably have very extensive human effort, espionage effort as well where they are keeping track of our movements by any means possible. They have very heavy reliance, I would say, [deleted].

Senator **Hart**. Referring particularly, I think, to the criticism of the Aegis system in that regard.

Admiral **Trost**. You have to have a very careful trade-off between what you gain as opposed to what you give away, and part of the electronic warfare doctrine for the fleet is based on knowing that anybody who emits—we or they—is vulnerable to detection. We have had some marked success [deleted].

We also find that there comes a time with different types of systems, especially some of our long-range detection radars, when we give up more tactical advantage by being silent than we do by radiating.

So, if you are thinking of the Aegis in terms of being a big beacon, to a degree it is, and certainly it is detectable. Any radar is detectable. If you look at its range and capability, in all likelihood a battle group commander gains more by its use than he gives away by its use. That has to be weighed very carefully, that all depends on the situation.

Senator **Hart**. Finally, have you seen any evidence of Soviet experimentation with new technology propulsion systems for submarines that is neither a nuclear nor a conventional diesel?

Admiral **Shapiro**. [Deleted.]

Senator **Hart**. Thank you, Mr. Chairman.

NAVY SWING STRATEGY

Senator **Cohen**. I have two more questions, gentlemen. Would you say, Admiral, that the swing strategy is dead as far as the Navy is concerned?

Admiral **Trost**. I think that one is mine. May I say first of all that in my personal opinion I hope so. But I think that, yes, there is an increasing recognition that to swing forces simply takes them out of action everywhere for an extended period of time and causes one to give up capability in the area from which they came and not add it to the other area for a period of time, such that they may not arrive in time to make the difference.

I cannot tell you exactly what the members of the Joint Chiefs think about it, but I have seen more emphasis on capability necessary in a given area without relying on other forces being swing-in.

Senator **Cohen**. Admiral Shapiro, a few years ago the word SOSUS was not whispered, or apparently whispered. Now you read about it quite a bit in the press. We rely upon it a good deal to locate and track Soviet submarines.

Have the Soviets learned the locations and the vulnerability of the SOSUS listening devices?

Admiral **Shapiro**. I think they certainly have read all the articles that have appeared to date, sir. [Deleted.] We still do a pretty good job.

They certainly are aware of SOSUS, [deleted].

Senator **Cohen**. Do they have anything comparable to SOSUS?

Admiral **Shapiro**. They certainly do not.

[Deleted.]

Senator **Cohen**. One of the most important questions that faced the Navy during the Second World War was how to locate the enemy, where is the enemy. Today we rely a good deal upon satellites to not only communicate with our own ships and navigate, but to find the enemy.

There have been a number of reports that the Soviets have developed an antisatellite weapon system that could be placed in space. What is your assessment of the Soviet Union's ability to destroy our Navy's satellite.

Admiral **Shapiro**. [Deleted.]

I would like to submit for the record a more precise answer if I may, sir.

[The information follows:]

Threat to Navy Satellites

Question. What is the threat to Navy satellites and what are we doing abot it?

Answer. The only wholly Navy operated satellite system is the low-orbit Transit navigation system, with an altitude of about 1,110 kilometers. [Deleted.] Navy is the executive agent for DoD for Fleet Satellite Communications (FLTSATCOM) Program which operates at UHF at geosynchronous altitude. The primary threats to the UHF communications satellites projected thoughout the 1980's [deleted].

A PROJECTED THREAT IN THE 1990'S

To counter these threats the essential command and control links of all Military Services will be moved to higher frequencies [deleted] for the minimum essential portion of DoD's total requirements. Of significant operational benefit is the fact that transmissions at these higher frequencies are extremely directional and are unlikely to be intercepted unless one is directly in the main beam of the transmitting antenna. This resulting low probability of intercept is essential for protecting the location of strategic forces such as airborne command posts and fleet ballistic missile submarines. Neither jamming resistance nor low probability of intercept are available in today's systems.

The FLTSATCOM spacecraft itself is hardened against nuclear radiation. The future MILSTAR EHF communications satellites will also be hardened, as will the initial EHF transition packages to be flown on FLTSATCOM satellites 7 and 8. Commercial satellites used by DoD, such as the leased GAPFILLER transponders and the LEASAT satellite, [deleted].

The new multi-mission EHF satellites [deleted]. A further military advantage is gained by the use of crosslinks between satellites to reduce the dependence on ground-based control stations. Inherent therefore is the ability to provide enduring connectivity during the trans and past SIOP period and a report back capability for the SIOP forces.

Senator **Cohen**. What do we do to take action to protect those satellites?

Admiral **Shapiro**. Again I would like to submit that for the record if I may, sir.

[Deleted.]

Senator **Cohen**. How do the Soviet sea-lift capabilities compare to those of the United States?

Admiral **Shapiro**. Their naval capabilities, sir, in general?

Senator **Cohen**. Well, take sea-lift.

Admiral **Shapiro**. They, of course, have, I guess, the advantage to be able to press their merchant marine into immediate service. As I indicated earlier, large numbers of their merchant ships are immediately available for amphibious operations, and in fact do exercise that way [deleted]. So, they certainly would be available to them and that would give them a very significant sea-life capability.

They own their merchant marine, it is a government agency and it is much easier for them to control it as a result, sir. The entire

Soviet merchant fleet can be put to that use. Does that answer the question?

Admiral **Trost**. And many of their merchant ships have capabilities which are specifically tailored to a military application.

Senator **Cohen**. I understand they also have that with respect to their commercial air force as well. I have read articles about the Aeroflot planes which are also fully integrated into a military scenario.

Admiral **Shapiro**. Yes, sir.

Senator **Cohen**. With respect to Soviet radars, do they have phased array radars?

Admiral **Shapiro**. Yes, sir, [deleted].

Senator **Cohen**. Do they have any air defense systems that are comparable to those that will go into the CG-47?

Admiral **Shapiro**. [Deleted.]

SINKING AN OSCAR

Senator **Cohen**. What kinds of weapons would we rely upon to sink an *Oscar?*

Admiral **Trost**. Well, we would have to rely on our antisubmarine torpedos, currently the Mark-48 and the Mark-46, as well as the Subroc missile which is submarine launched, or the Asroc launched from a surface combatant.

Senator **Cohen**. Can they be relied upon to sink the *Oscar?* [Deleted.]

Admiral **Trost**. I cannot tell you the exact capability, I think the mission-disability capability is more likely. If we are talking about one weapon I think it would be highly dependent on where it hit. I know that [deleted], that the ship is certainly a harder target to sink. A submarine with a hole in the side of its ballast tanks, however, does not ever operate on the surface again. So, it may be that it is mission disabled without sinking it.

Senator **Cohen**. In response to Senator Hart's question when he asked you what the general purpose of the Soviet naval doctrine was, you went through the whole array of missions, mainly the defense of the homeland, and then ultimately sea power.

But you did not really talk about the interdiction of interests vital to the United States. You talked about protection of interest vital to the Soviet Union. Are they in your judgment developing a sea power for a purpose of interdicting the U.S. use of its sea lines?

Admiral **Shapiro**. Yes, sir. They are concentrating or talking more about a prolonged conventional war, and as a result of that I think the emphasis is on interdiction of our sea lines of communications, that certainly receives great emphasis. This, of course, can be by means of mine warfare or submarines, diesel submarines entering into that, as well as the nuclear powered.

Senator **Cohen**. Admiral, are we worse off this year than we were last year in terms of our comparison with the Soviet's naval capability?

Admiral **Shapiro**. I find it very difficult to draw a direct comparison because the missions are in many respects so different. I have a tendency to look at the Soviet Navy in terms of a trend or projection, and the line continues to go up at least the same slope.

I guess from that standpoint we are worse off if they continue to maintain that momentum, notwithstanding all of the problems they have at home. Whether or not we are able to close the gap or avoid their creating one is something I would have to turn to Admiral Trost for.

Admiral **Trost**. Well, I think it would be difficult to say precisely how we measure up vis-a-vis last year. In the last year and as a result of the budgets of the 1981 and 1982 timeframe we certainly gained considerably enhanced capability for existing forces. We also have a start on what I think is a healthy upramp in improving our capabilities, both for present forces and enhancing the force structure of the future.

So, I would say that with each year, although we see this continuing growth in Soviet capability, we should also, barring some turnabout in policy, see an improvement in our own relative status.

SUDAN

Senator **Cohen**. How important is Sudan to the security of the Red Sea; does that have any bearing at all?

Admiral **Trost**. In my judgment it has a considerable bearing, in part because of its location immediately adjacent to the Egyptian border, in part also because the Sudanese have provided support for the rebel forces in Ethiopia and tied down a considerable Ethiopian presence on the side that is being supported by the Soviet Union. I think anything that adds to instability in that important region poses a threat for the Red Sea.

Senator **Cohen**. While we were in Egypt, President Mubarak was especially concerned about Sudan. He lectured me at length, saying we must do something. What should be done he left to us to decide, other than the general point "We must save the Sudan."

Perhaps environmental groups may pick up here, Harry, in terms of what that message might be. But he was very, very strong on this issue. He was fearful that Sudan was going to go under and he pointed to what kind of a threat that would pose.

If you look at the map, you look at Aden where the Soviets have access today. They do not have any facilities, as I understand it, of any significant degree anywhere in Sudan.

Admiral **Trost**. In Sudan they do not. They do not have access to the Sudan presently. Their facilities are of course in Ethiopia and South Yemen. They make use of both the airfield and the port facilities, which Admiral Shapiro noted. They make considerable use of them for ship repair and ship presence. They use the airfield for flights of aircraft out to attempt to keep tabs on our ships out in the Arabian Sea.

They also have a considerable capability for ship repair at the Dehalak Island in the Red Sea, off the coast of Ethiopia. Most of their submarines do their refits there. And then [deleted] the airfield in Ethiopia is used by Soviet maritime surveillance aircraft as well and has been for the last several years.

In Sudan itself they have no capablility. They pose an additional threat at the mouth of the Red Sea because Perim Island, which is the little island right in the center of things, with Soviet support, is patrolled and manned by South Yemenis. You cannot go into the Red Sea without passing within visual range of that island.

IRAN

Senator COHEN. Iran is conducting P-3 operations almost on a daily basis now. One of them passed within 500 feet of the U.S.S. *Kennedy* while we were aboard.

Admiral TROST. We thought he came to give you a show. [Laughter.]

Senator COHEN. Apparently he does it about every day, certainly during the course of the week.

Gentlemen, this is all I have for questions right now. I have a number of questions I will submit to you for the record and look forward to your response.

Harry, do you have anything else?

Senator BYRD. I have no more questions.

[Questions with answers supplied follow:]

QUESTIONS SUPPLIED BY SENATOR WILIAM S. COHEN

PHASED ARRAY RADAR

Senator COHEN. Do the Soviets have a phased array radar counterpart to Aegis?

Admiral SHAPIRO. [Deleted.]

SOVIET NAVAL AVIATION LAND-BASED AIRCRAFT

Senator COHEN. Admiral Shapiro, land-based aircraft operated by Soviet Naval Aviation have been described as a potent threat to our ships at sea. How many of each of these aircraft are there? What changes do you expect to see in future years?

Admiral SHAPIRO. The primary land-based threat aircraft are the Backfire B and Badger C/G. We also expect a future, more advanced bomber to enter the naval inventory. Current and projected numbers of these aircraft are:

	Current	1985	1995	2005
Backfire	[Deleted]	[Deleted]	[Deleted]	[Deleted]
Badger C/G	[Deleted]	[Deleted]	[Deleted]	[Deleted]
Advanced bomber	[Deleted]	[Deleted]	[Deleted]	[Deleted]

AIR LAUNCHED ANTI-SHIP CRUISE MISSILES

Senator COHEN. What are the characteristics of the weapons carried?

Admiral SHAPIRO. The attached data sheet shows the characteristics of air launched anti-ship cruise missiles.

[Table deleted.]

SIMULATED SEA BATTLES

Senator COHEN. Have we conducted exercises simulating attacks by land-based aircraft, either alone or together with submarine attacks, and what have been the results?

Admiral SHAPIRO. We routinely conduct simulated attacks by land-based aircraft, both alone and in conjunction with surface and sub-surface platforms, during major fleet exercises. The simulated bomber aircraft attempt to penetrate battle group defenses to reach their missile release range. They may then either turn outbound, continue in bound toward the force center simulating anti-ship cruise missiles, or launch target drones at the battle group. Aircraft and surface launched drones also fly low level profiles simulating surface and subsurface launched anti-ship cruise missiles. These simulated attacks are usually supported by chaff and electronic countermeasures.

[Deleted.]

SOVIET LAND-BASED AIR THREAT

Senator COHEN. What is your overall assessment of this threat, and what are your projections for the future?

Admiral SHAPIRO. [Deleted.]

CTOL CARRIER AVIATION

Senator COHEN. Admiral Shapiro, you have talked about the *Kiev* class aircraft carrier and a new class of CTOL carrier. What aircraft do you expect these later carriers to have?

Admiral SHAPIRO. [Deleted.]

Senator COHEN. Why are they taking CTOL tactical aviation to sea since they have not in the past?

Admiral SHAPIRO. Past missions and roles of the Soviet Navy did not require the capabilities of a CTOL carrier. As these missions have evolved and expanded, the Soviets appear to have concluded that CTOL tactical aviation is necessary to execute naval missions, [deleted].

Senator COHEN. What signs do you have that they will have a CTOL air wing ready in the next decade or so?

Admiral SHAPIRO. [Deleted.]

CTOL CARRIER AIRCRAFT MIX

Senator COHEN. What will the mix of aircraft be?

Admiral SHAPIRO. [Deleted.]

FORGER OPERATIONS

Senator COHEN. How have the Forger aircraft performed lately and how are they being operated? Are we seeing improvement in their operations?

Admiral SHAPIRO. [Deleted.]

COMMUNICATIONS JAMMING

Senator COHEN. Admiral Shapiro, what capabilities do the Soviets have for interfering with or jamming communications and coordination within a carrier battle group in war time?

Admiral SHAPIRO. [Deleted.]

SURFACE-TO-AIR MISSILE SYSTEMS

Senator COHEN. Admiral Shapiro, please compare the surface-to-air missiles on board to *Kirov* to our own naval SAMs.

Admiral SHAPIRO. The following data provides a comparison of U.S. Naval surface-to-air missiles with those aboard the Soviet *Kirov* class CGN:

U.S. NAVAL SURFACE-TO-AIR MISSILES

	SM-1(ER)	SM-1(MR)	SM-2 BLK1(ER)	Sea Sparrow
Range:	[deleted]			
Altitude:	....	[deleted]		
Guidance:	Semi-Active	Semi-Active	Semi-Active	Semi-Active
Warhead:	Conventional	Conventional	Conventional	

SOVIET KIROV CLASS CGN SURFACE-TO-AIR MISSILES

	SA-N-4	SA-N-6
Range:		
Altitude:	[deleted]	
Guidance:		
Warhead:		

ANTISHIP CRUISE MISSILES

Senator **Cohen**. What anti-ship weapons are carried on board Soviet air, surface, and submarine platforms? Please provide weapons characteristics, including speed, range, flight profile, warhead type, type of homing sensor, and sensor limitations.

Admiral **Shapiro**. [Deleted.]

[Tables deleted.]

FUTURE SOVIET MISSILES

Senator **Cohen**. What new weapons do you expect to observe in the future?

Admiral **Shapiro**. The projected anti-ship weapons, their pertinent characteristics and their delivery platforms are described in the following tables.

[Tables deleted.]

ADVANCED ELECTRONIC CIRCUITS

Senator **Cohen**. What changes in Soviet weapons do you expect to see as a result of their growing capability to manufacture advanced electronic circuits?

Admiral **Shapiro**. [Deleted.]

ELECTRO-OPTIC SENSORS

Senator **Cohen**. What electro-optic sensors do Soviet surface ships have?

Admiral **Shapiro**. [Deleted.]

SEABORNE LASERS

Senator **Cohen**. What is your assessment of Soviet efforts to develop [deleted] ship-based laser?

Admiral **Shapiro**. [Deleted.]

SOVIET LASER WEAPON SYSTEM

[Table deleted.]

SOVIET SUBMARINE PERSONNEL

Senator **Cohen**. Admiral Shapiro, I have some questions concerning Soviet submarines. First, how do the Soviets man their nuclear submarines, and how do they train these men? What special compensation is provided?

Admiral **Shapiro**. The Soviet Navy, together with the Strategic Rocket Forces, reportedly gets first choice of conscripted personnel. We believe that both individuals and crews as a whole are required to complete detailed and lengthy qualification procedures. [Deleted.] they probably use at least some conscripts. [Deleted.]

MANNING SOVIET SUBMARINES

Senator COHEN. Are they having any problems in either manning or training?
Admiral SHAPIRO. [Deleted.]

SOVIET SUBMARINE SAFETY STANDARDS

Senator COHEN. Do they maintain the same safety standards that we do? [Deleted.]
Admiral SHAPIRO. [Deleted.]

SUBMARINE COMMUNICATIONS PROCEDURES

Senator COHEN. If the *Typhoon* submarine operates [deleted], how will they maintain communications with it?
Admiral SHAPIRO. We believe that the Soviets are developing [deleted] communications system. [Deleted.]

U.S. VERSUS SOVIET SUBMARINE RADIATED NOISE

Senator COHEN. It is understood that Soviet submarines are generally noisier than U.S. submarines, [deleted].
Admiral SHAPIRO. [Deleted.]

OFFENSIVE CHEMICAL WARFARE WEAPONS

Senator COHEN. Admiral Shapiro, to what degree do you believe the Soviet Union has integrated a chemical warfare capability into its offensive naval weaponry?
Admiral SHAPIRO. [Deleted.]

PERSISTENT CHEMICAL WARFARE AGENTS AGAINST NAVAL FORCES

Senator COHEN. What impact do we expect the detonation of a chemical weapon laden with persistent agents would have on the combat operations of an aircraft carrier, amphibious vessel, or other surface combatant?
Admiral SHAPIRO. [Deleted.]

AIRCRAFT DELIVERED CHEMICAL WARFARE WEAPONS

Senator COHEN. Admiral Shapiro, do you have any evidence that Soviet long-range Naval Aviation has an offensive chemical warfare capability?
Admiral SHAPIRO. [Deleted.]
Senator COHEN. Do you believe that aircraft-delivered chemical weapons pose a serious threat to U.S. surface ships or overseas naval support facilities?
Admiral SHAPIRO. [Deleted.]

NUCLEAR ARMED WEAPONS

Senator COHEN. Which of their anti-aircraft, anti-missile, and anti-submarine weapons have nuclear weapons?
Admiral SHAPIRO. [Deleted.]

SOVIET CHEMICAL WARFARE

Senator COHEN. Admiral Shapiro, given your comments concerning Soviet chemical warfare capabilities, and your discussion of Soviet naval nuclear weapons, do you believe that the United States can credibly deter the Soviet Union from employing chemical weaponry by threatening retaliation with nuclear weapons?
Admiral SHAPIRO. [Deleted.]

SOVIET VIEW OF NUCLEAR WAR

Senator COHEN. Admiral Shapiro, you said you felt that the Soviets viewed all-out nuclear war as only a last resort. Why do you hold this view?
Admiral SHAPIRO. The Soviets still remember vividly the immense damage and casualties suffered by the Motherland during World War II. They also are fully aware of the devastating consequences of an all out nuclear war; and Soviet leaders have repeatedly described nuclear war as catastrophic for all concerned. Marxist ideology tells the Soviets that the victory of socialism over capitalism is inevitable. I believe Soviet leaders would be reluctant, except as a last resort, to risk by a nuclear war what they consider achievable by other means. [Deleted.]

LOWER LEVEL NUCLEAR CONFLICT

Senator **Cohen**. Do you think they would be less reluctant to engage at some lower level of nuclear conflict, especially at sea?

Admiral **Shapiro**. [Deleted.]

Senator **Cohen**. What do they do to their combatants, especially things different from what we do, to be able to fight and win a lower level nuclear conflict?

Admiral **Shapiro**. [Deleted.]

SOVIET ASAT CAPABILITIES

Senator **Cohen**. Admiral Shapiro, when asked about Soviet ASAT capabilities, you mentioned a difference [deleted].

Admiral **Shapiro**. [Deleted.]

GENERAL WAR AT SEA

Senator **Cohen**. The potential for a general war at sea with the Soviet Union which would not escalate into nuclear warfare is not clearly defined. But in the event that it happened, what would be the effect if (1) the Soviet Union had a fully-developed anti-satellite capability; or (2) SOSUS is destroyed; or (3) Iceland is invaded and captured by the Soviets?

Admiral **Shapiro**. [Deleted.]

WARSAW PACT MERCHANT MARINE

Senator **Cohen**. Admiral Shapiro, what is the role of the Soviet and Warsaw Pact merchant marine in carrying traffic between the United States and our allies? Please provide statistics, if available.

Admiral **Shapiro**. Data in tables 1 through 3 reflect the number of Soviet and Warsaw Pact ships which either arrived in U.S. ports from non-Communist ports or departed U.S. ports for non-Communist ports for the years 1979 through 1981. These figures reflect ship movements only and are not to be construed as representing levels of trade activity. These data reflect only the last port of call prior to calling the United States and only the next reported call subsequent to calling the United States. They do not reflect other non-Communist ports of call made during the course of the voyage nor do they indicate loading ports. Overall, the ships carried mostly general cargo, with some grain.

The year 1979 was the end of several years of relatively constant growth in Communist shipping to the United States. During that year 291 Soviet ships made 574 voyages and 97 other Warsaw Pact ships made 233 voyages to United States ports. Of these 1614 arrivals and departures to and from United States ports, 840 (52 percent were either arriving from or departing to non-Communist ports of call.

The combination of the longshoremen's boycott of Soviet shipping on the United States gulf and east coasts and the grain embargo had a significant impact on the level of Soviet shipping to the United States during 1980. Only 72 Soviet ships called in the United States that year, making 128 voyages. Ninety-six other Warsaw Pact ships made 291 voyages. Of 838 arrivals and departures, 516 (61 percent) were from/to non-Communist ports of call. Taken individually, 84 percent of Soviet arrivals and departures involved non-Communist ports of call.

During 1981, 104 Soviet merchant ships made 149 voyages while 107 other Warsaw Pact merchant ships made 278 voyages to United States ports. This reflects the moderate increse of Soviet shipping activity subsequent to the end of the longshoremen's boycott and the grain embargo. Fifty-five percent of the arrivals and departures involved non-Communist ports of call.

Following the lapse of the United States/Soviet shipping agreement on 1 Jan 1982, prohibitions have been imposed on Soviet ships engaged in cross trade activity, i.e. ships carrying cargo which neither originated in nor is destined for the United States or the Soviet Union.

The Soviet Union and, to a lesser extent, other Communist nations engage Free World ships on a charter basis to carry a portion of their national trade. These chartered Free World ships often call at United States ports but are not included herein.

1979

ARRIVALS

	WEST COAST		EAST COAST		GREAT LAKES		GULF COAST		TOTAL	
	SOVIET	BLOC	SOVIET	BLOC	SOVIET	BLOC	SOVIET	BLOC	SOVIET	BLOC
JAN	10	-	9	6	-	-	9	4	28	10
FEB	10	-	7	5	-	-	11	3	28	8
MAR	9	-	7	8	-	-	5	-	21	8
APR	8	-	10	5	-	1	5	5	23	11
MAY	12	-	8	8	3	4	5	2	28	14
JUN	11	-	8	5	1	3	7	10	15	18
JUL	6	-	9	4	3	1	3	6	21	11
AUG	9	-	6	3	-	1	4	-	19	4
SEP	9	-	7	3	-	3	3	8	19	14
OCT	11	-	5	6	2	1	2	5	20	12
NOV	7	-	3	2	3	-	4	6	17	8
DEC	12	-	4	5	1	-	2	2	19	7
TOT	114	-	83	60	13	14	60	51	270	125

DEPARTURES

	WEST COAST		EAST COAST		GREAT LAKES		GULF COAST		TOTAL	
	SOVIET	BLOC	SOVIET	BLOC	SOVIET	BLOC	SOVIET	BLOC	SOVIET	BLOC
JAN	4	-	8	2	-	-	14	3	26	5
FEB	12	-	7	5	-	-	13	1	32	6
MAR	9	-	11	5	-	-	20	2	40	7
APR	8	-	12	3	-	-	9	3	29	6
MAY	9	-	8	6	3	2	13	-	34	8
JUN	11	-	10	5	4	5	10	4	35	14
JUL	6	-	8	3	3	-	4	-	21	3
AUG	5	-	8	3	2	2	11	-	27	5
SEP	7	-	9	2	1	3	12	-	29	5
OCT	8	-	6	7	4	2	12	1	30	10
NOV	11	-	5	4	2	3	7	1	25	8
DEC	11	-	5	3	2	2	13	4	31	9
TOT	102	-	98	48	21	19	138	19	359	86

The leading nations from/to which these calls were conducted are as follows:

ARRIVALS FROM		DEPARTURES TO
38	Canada	56
9	Netherlands	94
59	Italy	45
70	Japan	56
42	France	11
53	West Germany	8

TABLE 1

1980

ARRIVALS

	WEST COAST		EAST COAST		GREAT LAKES		GULF COAST		TOTAL	
	SOVIET	BLOC	SOVIET	BLOC	SOVIET	BLOC	SOVIET	BLOC	SOVIET	BLOC
JAN	9	-	2	-	-	-	1	9	12	9
FEB	12	-	2	-	-	-	1	11	15	11
MAR	11	-	1	4	-	-	-	10	12	14
APR	8	-	1	2	1	4	-	7	9	13
MAY	8	-	-	4	-	3	-	7	8	14
JUN	4	-	-	2	-	3	-	8	4	13
JUL	6	-	-	5	-	3	-	8	6	16
AUG	4	-	-	4	-	3	-	9	4	16
SEP	7	-	-	6	-	2	1	4	8	12
OCT	5	-	-	2	-	2	1	8	6	12
NOV	6	-	-	2	-	1	1	1	7	5
DEC	6	-	-	4	-	-	-	8	6	12
TOT	86	-	5	36	1	21	5	90	97	147

DEPARTURES

	WEST COAST		EAST COAST		GREAT LAKES		GULF COAST		TOTAL	
	SOVIET	BLOC	SOVIET	BLOC	SOVIET	BLOC	SOVIET	BLOC	SOVIET	BLOC
JAN	12	-	3	4	-	-	4	5	19	9
FEB	10	-	1	3	-	-	-	1	11	4
MAR	13	-	-	5	-	-	1	3	14	8
APR	9	-	1	5	-	2	-	4	10	11
MAY	8	-	-	7	1	3	1	4	10	14
JUN	6	-	-	7	-	2	-	6	6	15
JUL	3	-	-	5	-	1	-	2	3	8
AUG	5	-	-	5	-	5	1	3	6	13
SEP	12	-	-	5	-	2	-	7	12	14
OCT	11	-	-	6	-	5	1	8	12	19
NOV	10	-	-	8	-	3	1	4	11	15
DEC	10	-	-	7	-	-	-	11	10	18
TOT	109	-	5	67	1	23	9	58	124	148

The leading nations from/to which these calls were conducted are as follows:

ARRIVALS FROM		DEPARTURES TO
22	Canada	66
13	Netherlands	66
9	Mexico	14
42	Italy	11
55	Japan	43

TABLE 2

1981

ARRIVALS

	WEST COAST		EAST COAST		GREAT LAKES		GULF COAST		TOTAL	
	SOVIET	/BLOC	SOVIET	/BLOC	SOVIET	/BLOC	SOVIET	/BLOC	SOVIET	/BLOC
JAN	6	-	-	1	-	-	-	5	6	6
FEB	2	1	-	2	-	-	1	4	3	7
MAR	5	-	-	5	-	-	-	4	5	9
APR	6	-	1	3	-	-	-	2	7	5
MAY	5	-	-	7	-	-	-	2	5	9
JUN	5	-	-	6	-	-	-	6	5	12
JUL	2	-	-	8	-	1	1	4	3	13
AUG	1	-	1	5	-	1	2	5	4	11
SEP	4	-	-	6	-	1	2	2	6	9
OCT	1	2	-	7	-	1	3	1	4	11
NOV	4	-	1	4	1	3	-	3	6	10
DEC	4	-	-	4	2	-	1	1	7	5
TOT	45	3	3	58	3	7	10	39	61	107

DEPARTURES

	WEST COAST		EAST COAST		GREAT LAKES		GULF COAST		TOTAL	
	SOVIET	/BLOC	SOVIET	/BLOC	SOVIET	/BLOC	SOVIET	/BLOC	SOVIET	/BLOC
JAN	5	-	-	3	-	-	2	3	7	6
FEB	3	-	-	4	-	-	-	2	3	6
MAR	3	-	-	8	-	-	2	1	5	9
APR	5	-	2	9	-	-	-	4	7	13
MAY	3	-	-	8	-	-	1	1	4	9
JUN	5	-	1	7	-	-	2	3	8	10
JUL	1	-	-	6	-	-	2	1	3	7
AUG	3	1	1	6	-	2	4	1	8	10
SEP	1	-	-	5	-	-	2	2	3	7
OCT	6	1	-	5	-	1	2	3	8	10
NOV	3	-	-	5	1	-	6	2	10	7
DEC	4	-	1	4	2	4	10	3	17	11
TOT	42	2	5	70	3	7	33	26	83	105

The leading nations from/to which these calls were conducted are as follows:

ARRIVALS FROM		DEPARTURES TO
20	Canada	50
32	Netherlands	42
18	Mexico	14
16	Spain	13
14	Italy	13
20	Japan	7

TABLE 3

SOVIET MERCHANT MARINE

Senator COHEN. In addition to forming a naval auxiliary for the Soviet Navy, does the growth of the Soviet merchant marine have any effect on the size of the civilian sea lift capability of the United States or our closest allies?

Admiral SHAPIRO. The Soviet assumption of a large share of the world's shipping market, with the accompanying loss of business for Western shipping interests, could serve as a disincentive for Western nations to maintain, let alone modernize and expand, current sea lift capabilities. On the other hand, [deleted].

I can't predict how we in the West will react to this challenge.

CUBAN MILITARY POWER BASE

Senator COHEN. In 1962, the U.S. blockaded Cuba in order to prevent the installation of Soviet offensive weapons. Today there are stories of aircraft with potential nuclear capability being delivered to Cuba by the Soviet Union. What are the significant developments during the past years which have increased the danger from military power based in Cuba?

Admiral SHAPIRO. From our point of view, the key developments have been the significant upgrades of the Cuban Navy and Air Force since 1978. The Navy, for example, has acquired two Soviet *Foxtrot* diesel attack submarines. These are the first submarines in the Cuban Navy and they greatly extend the range of its offensive firepower. Cuba has also received [deleted] OSA-II missile attack boats, which carry SS-N-2/STYX surface-to-surface missiles and pose a potential threat to shipping in vital Caribbean sea lanes. The new *Koni* frigate is the Navy's first large surface combatant, and it provides the Navy its first, albeit limited, surface-to-air missile capability. In less than four years, the Navy has been thus transformed from essentially a coast guard to a force capable of conducting offensive operations beyond its home waters. The expansion of the Cuban Air Force further enhances the maritime threat from Cuba, because Cuban aircraft can easily reach Atlantic, Caribbean and Gulf waters from any of their major operating bases.

[deleted]; the effectiveness of the Air Force was vividly demonstrated two years ago, when Cuban *Fishbed* fighters sank a Bahamian patrol boat 50 NM from the Cuban coast. Our concern is, of course, increased by the fact that Cuba's MIG-23/*Floggers*, while designed to be tactical ground attack aircraft, are technically capable [deleted]. Cuba has recently received additional Floggers, [deleted]. In sum, Cuba's military capabilities, and particularly its seapower, have undergone a marked qualitative improvement since 1978. We estimate that this improvement will continue; [deleted]. Finally, we should note that military facilities in Cuba have undergone a rapid expansion and modernization. The naval facility at Cienfuegos, which will be one of the largest and most sophisticated in Latin America, is a chief example. Facilities such as these not only indicate the continued expansion of Cuban forces, but raise the more ominous specter of Soviet use of these bases.

POLITICAL IMPACT OF OIL CUT-OFF

Senator COHEN. Admiral Shapiro, many nations are heavily dependent on imported supplies of energy, of course, and in your statement you briefly mentioned the severe economic impact of an abrupt cut-off of Middle East oil exports. Would you please provide a detailed assessment of the political impact of such an oil cut-off on countries around the world?

Admiral SHAPIRO. About 16 percent of all US oil imports come from the Middle East. Western Europe imports about 70 percent of its oil from the region while Japan imports about 75 percent. The importance of Middle Eastern oil to Western Europe and Japan is thus much greater than it is for the United States, and allied political cohesion would be severely strained by any interruption in supplies. The 1973 war highlighted the decisive political impact any real or threatened oil embargo could have upon the Alliance.

A cutoff of Middle Eastern oil supplies would have serious ramifications for both oil producers and oil-importing LDC's, also. The financial position of most OPEC countires has deteriorated since 1978. The major reasons for the erosion of the cartel's revenues are slack world demand for OPEC oil and inflated prices for imports, due primarily to the depreciation of the dollar against the currencies of the industrialized countries. Most OPEC members have billions sunk into capital intensive development projects that require continued expenditures of large amounts of cash and, in the case of Iran and Iraq, are engaged in a war that is costing each country [deleted] to wage.

An oil cutoff also would have a harsh impact on many oil-importing LDC's. LDC's in general have faced extreme economic problems from the steady increase in oil prices since 1974 and a cutoff likely would cause severe damage to their already rocky economies.

SOVIET TIES WITH IRAN

Senator **Cohen**. What evidence do you have that the Soviet Union is developing closer ties with the government of Iran or that it is supporting Iran's war effort? What is the possibility for increased Soviet support of the war? What factors tend to spread or inhibit the prosecution of this war?

Admiral **Shapiro**. Since early 1981, the Soviet Union has sought closer economic ties with Iran in an effort to forge links with present and future Iranian leaders and to reduce the long-term potential for Western economic and political reentry into the country. Soviet trade with Iran in 1981 returned to its pre-revolution level of around $1 billion, principally through the first time purchase of Iranian oil. The Soviets also signed trade agreements in May 1981 to double their exports to Iran, including the construction of additional facilities around the Soviet-supplied Esfahan steel mill with [deleted] Soviet technicians and advisers. [Deleted.] While the USSR has publicly stated its support for the "Iranian Revolution", [deleted].

Questions Supplied by Senator Harry F. Byrd, Jr.

F-14 ENGINE

Senator **Byrd**. What are implifications for fleet air defense without a new engine for F-14?

Answer. The F-14 community has had a number of problems with the TF30-414 engine, primarily reliability (including engine stalls) and maintainability. Initiatives are underway to both improve the TF30-414 and investigate alternative engines. The TF30-414A has been successfully tested and that fix is being incorporated. A limited demonstration of the F101 DFE engine has just been completed with favorable results. The TF30-414A is adequate for fleet air defense needs, although the F-14 with the F101 DFE demonstrated stall free operation, greater radius of operation in a deck launch interceptor role, and better acceleration for off-axis intercepts. The decision of whether to switch engines in future production aircraft will be based primarily on affordability.

Senator **Cohen**. The committee will stand adjourned.

[Whereupon, at 3:57 p.m., the subcommittee adjourned, to reconvene subject to the call of the Chair.]

Blank Page

3592

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

MONDAY, MARCH 8, 1982

U.S. Senate,
Subcommittee on Sea Power and Force Projection,
Committee on Armed Services,
Washington, D.C.

NAVY PROGRAM OVERVIEW

The subcommittee met, in open session, pursuant to notice at 9:30 a.m., in room 1224, Dirksen Senate Office Building, Senator William S. Cohen, chairman, presiding.

Present: Senators Cohen, Quayle, and Byrd.

Staff present: Francis J. Sullivan, minority staff director; Paul C. Besozzi, minority counsel; L. Wayne Arny III, James R. Locher III, professional staff members; Drew A. Harker, Mark B. Robinson, research assistants; Kathleen L. McGuire, staff assistants.

Also present: Buzz Hefti, assistant to Senator Warner; Jim Dykstra, assistant to Senator Cohen, Paul Schreiber, assistant to Senator Denton, Don Imgram, assistant to Senator Quayle, Gray Armistead, assistant to Senator Byrd, Greg Pallas, assistant to Senator Exon, and Bill Lind, assistant to Senator Hart.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator Cohen. The Sea Power and Force Projection Subcommittee will come to order.

Today it is my pleasure to welcome two Assistant Secretaries of the Navy who were not yet on board when we held our hearings last year, Mr. George Sawyer, who is in charge of Shipbuilding and Logistics, and Mr. Mel Paisley, who is the head of Research, Engineering, and Systems. Accompanying them are Vice Adm. Carl Trost, Director of Navy Program Planning, and Brig. Gen. Jacob Moore, the Marine Corps Deputy Chief of Staff for Research, Development, and Studies.

We have organized this hearing so that we might receive an overview of the Navy and Marine Corps programs and an explanation of the procurement, research, and military strategies that produced those programs.

As I understand it, Mr. Sawyer will introduce Admiral Trost, who will present the bulk of today's formal presentation. He will be followed by Mr. Sawyer, again, and by Mr. Paisley, who will each give short overviews of their respective areas of expertise in shipbuilding and R. & D. The more formal portion of the hearing will then end with a few words from General Moore.

Gentlemen, before we proceed, let me make a few observations about this year's budget and the roles we all play in seeing it to fruition. I know you are all already deeply involved in planning the budget for fiscal year 1984 and, if last year is any indication, will be working on the 1985 budget before this one is fully authorized and appropriated.

Indeed, we are all still working on the 1982 budget in the form of your supplemental request. Be that as it may, you should all remember that the 1984 and 1985 budgets are almost irrelevant until we finish the 1983 budget. By virtue of the way our system is organized, we rely heavily on the Department of Defense and on each service, and we will need your attention and your support until the day the bill is signed.

Second, while this is the only hearing at which we anticipate seeing Mr. Sawyer or Mr. Paisley in person, that does not mean that we will not need their command attention on subjects related to their directorates that will arise in later hearings or are left over from past years. Without their support and expertise, this budget has little chance of passing as we see it today.

In shipbuilding we have the largest budget we have seen in decades, including $6.8 billion for two *Nimitz* class carriers. Getting this one item approved will require a lot more than a few passing references in a statement or two. Moreover, there are questions for this year concerning how we are going to build a 600-ship Navy affordably, where our sealift is going, what a DDG–51 is and whether it can survive the budget process, and what the proper production rates are for our submarines, to identify only the most obvious.

Moreover, we have several questions left unanswered from the previous couple of years that must be properly addressed, specifically your plan to convert and charter instead of procuring maritime pre-positioning ships, your plans for the SL–7's, your designs for light carriers, and what we plan to do with what appears to be totally uncontrolled growth in the fingerprints for the Marines' amphibious lift, to name just a few.

In spite of the magnitude of the shipbuilding plan and the issues involved, it is actually Mr. Paisley who stepped into the hornet's nest when he took on the Navy R. & D. job. I am sure you read Congressman Price's statement before his R. & D. subcommittee and have heard of my own statements on the failing sense of good will between the Congress and the Navy.

While the House has always seemed to be a bit more specific in its guidance than the Senate has, I firmly believe that Mr. Price is generally correct in what he has stated.

Unless there is a concerted effort to improve relations and, more importantly, to improve the response of all of the services to the direction of the Congress, many of the programs that we all believe are essential to the Nation's military recovery will be irretrievably damaged during the full scope of the congressional budgetary process.

Specifically, Mr. Paisley, some of these rather controversial programs that you have had the good fortune to inherit include the 5-inch semiactive laser-guided projectile, the Seafire fire control system, the FFG-7 Mark-92 fire control system upgrade, RACER, medium depth mines, vertically launched ASW weapons, as well as others with which we are all familiar.

What is most troubling for me, as it was for Mr. Price, and I am sure is for many of my colleagues, is that some of these programs were cancelled or changed with little or no consultation with the Congress. Not only that, but the Navy is left with no effective alternatives, and we are told that firm unfulfilled requirements remain. This is not a satisfactory position for any of us to be in, in light of our overall spending for defense.

Gentlemen, for us to continue to rebuild this Nation's essential military strength and regain our maritime superiority requires the support of the majority of my colleagues in both Houses and in four committees.

We cannot form a budget that will secure those votes, if we ignore, dispute, or constantly reverse their will. As you well know, the Congress reviews the entire budget as best it can, given the time constraints it faces. It then changes relatively little, and changes that only after much discussion, controversy, and compromise.

It should be understandable, then, that what it does alter becomes somewhat sacrosanct in its own eyes, and if those changes appear to have been ignored, the subsequent reaction should be equally understandable. Again, I do not want to belabor this point, but I am afraid I agree with Mr. Price that some of the regrettable actions of the past couple of years must be discontinued, or the past procedures that allowed the substitution of mutual trust and respect for legislation will be superseded. That is a position to which none of us should aspire.

Again, I would like to welcome you and remind you, in line with subcommittee policy, that this hearing will remain open to whatever extent we can keep it open. If you find that there are some matters that must be discussed in a closed session, please just indicate that and we will save it for a closed session later in the day.

I was going to yield to Senator Byrd, but he is not here yet.

Mr. Sawyer, would you like to make an opening statement?

STATEMENT OF HON. GEORGE A. SAWYER, ASSISTANT SECRETARY OF THE NAVY (SHIPBUILDING AND LOGISTICS)

Mr. **Sawyer**. It is a great pleasure for me to appear here along with Secretary Paisley and Admiral Trost. We very much recognize and appreciate the past support of this committee in our Navy programs. As the Secretary of the Navy has indicated, we have made a good start in our fiscal year 1982 supplemental and 1982 programs toward achieving the objective that I think we all share, a 600-ship Navy by the end of this decade.

Your introductory remarks are rightly focused on the principal issue, namely what kind of 600-ship Navy we mutually agree is appropriate for our national defense. We hope that our comments both today and in later presentations before this subcommittee will assist us to come to a firm agreement on the types of programs and the logic of their utility.

Without any further comment I would like to introduce Admiral Trost who will present formally an overview of the Navy program.

STATEMENT OF VICE ADM. CARLISLE A. H. TROST, DIRECTOR, NAVY PROGRAM PLANNING

Admiral TROST. Good morning, Mr. Chairman. I am pleased to have an opportunity to return before this committee to continue the discussions we began last week on the Navy's force structure and its force structure planning.

In the prepared statement which I submitted for this committee's use, I discussed at some considerable length those factors which drive the emphasis on maritime superiority which you have heard from the Secretaries of Defense and Navy and from the Chief of Naval Operations in their prior testimony.

With your concurrence, I would like to submit that statement for the record and then proceed, using view graphs, to provide a quick review to the subcommittee on those factors that influence naval force structure planning.

NATIONAL PRIORITIES AND THE DEFENSE BUDGET

The major focus as you have already so properly noted in our deliberations in the Congress and in our efforts in the Pentagon, is on meeting the Nation's priorities, to structure forces within given resources which will properly permit us to accomplish the missions and tasks assigned our Nation's defense forces.

There has been a considerable emphasis in the testimony of the senior officials who come before the Congress on the need for maritime superiority, essentially a strong maritime posture in support of our Nation's economic, political, and security interests.

I am pleased that in appearing before this subcommittee today I find that the Congress is focused very intensely on what defense the Nation actually needs. We are talking about what is required, how we get there, and when we get there as opposed to whether or not we need a military force or whether or not we need a Navy.

I think that is a healthy shift and one which indicates a level of understanding that makes our job much easier in explaining routine capability requirements. The factors which influence the structure of all military forces are those shown here.

PLANNING FUTURE FORCE STRUCTURE OVERVIEW

Inputs: National objectives and strategy; the global threat; required Navy characteristics; balance and strain; future warfare environment; force structure today.

Output: Future force structure: Goals; bounds on the possible.

Clearly we are driven by national objectives and strategy which have been so well outlined in testimony before this subcommittee, and which I have alluded to also in my prepared statement, so I won't go into detail about these factors.

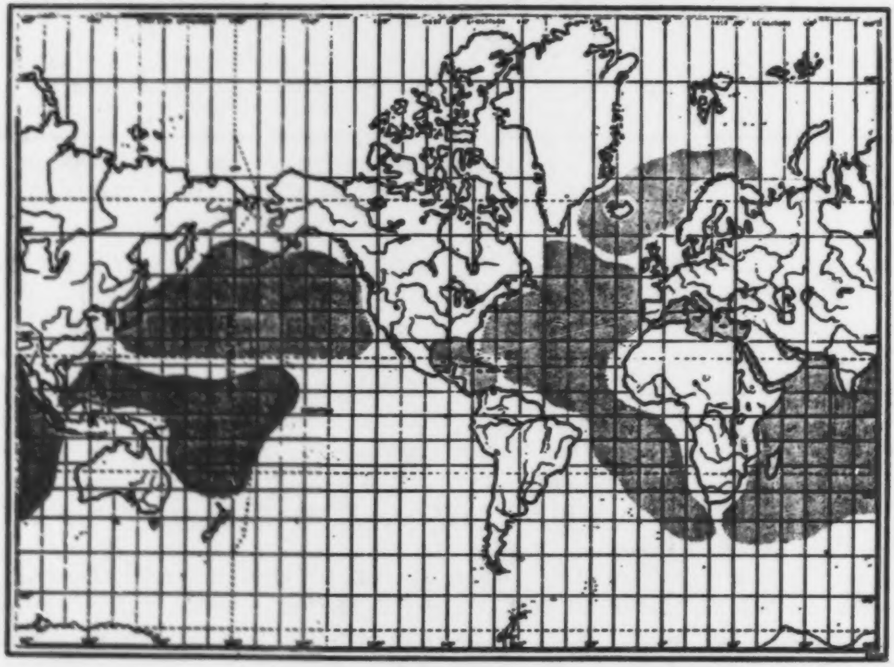
The global threat is clear. You and your subcommittee have taken the time to understand that threat better and I know you are well aware of the factors that drive our concerns.

I would like to discuss with you briefly those characteristics which are required of a Navy and which drive our thinking. The balance and strain which I refer to is in essence assuring that we live within those reasonable levels of resources which are made available to us and still recognize the need to build adequate capability.

I would like to discuss the future characteristics which drive our thinking because naval forces are, after all, highly capital intensive and they are complex. We therefore must insure that what we design and what we build and what we procure is in fact the kind of hardware needed to carry us out through a period not just 10 years from now, but in the case of our major aircraft carriers, a period some 45 years after their delivery.

I will then briefly review the force structure we have today, the constraints that tie us to the future force levels we propose, and discuss briefly what those force levels are.

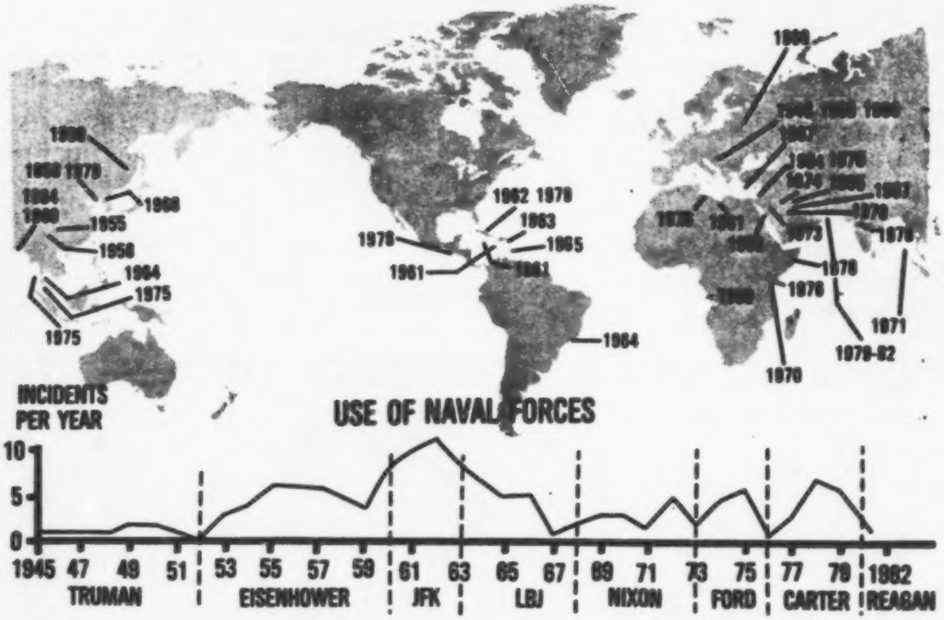
WORLD OCEAN AREAS WHERE CONTROL IS VITAL



As Senator Byrd pointed out so clearly the other day, there is a considerable area of the world's oceans which are of importance to the United States, not only in support of our peacetime economy, but also specifically being the avenues through which we, our friends and allies import a major proportion of our energy resources and much of the raw materials which keep our economy functioning.

There are areas of the world which, if we could not control them in a period of crisis or a period of conflict, would serve to our disadvantage in that we could no longer support other U.S. forces and those forces of our allies engaged overseas.

CRISIS POINTS, 1945 - 1982



Navy forces are perhaps a key indicator of the forward deployed strategy which has driven our policy since World War II. Those forces have been the forefront of employment options as instruments of national policy in various crisis areas over the period of the last 40 years and they have been used by every administration because they are forward deployed and readily available—a quick reaction Navy and Marine Corps capability in which we take pride.

In many of those instances you have seen Navy forces used in support of other U.S. and allied forces throughout the range of our military capability.

As we look ahead, we are then driven by the fact and the consideration that we have to structure forces for a wide range of military applications, We have, of course, the responsibility for providing those strategic forces which serve as one leg of our strategic Triad. They must be survivable.

The new Trident—the force which is coming into being and has now its first ship, the *Ohio*, in operation—epitomizes a strongly capable force which is also a survivable force. We have a strong responsibility to insure that we provide the necessary command and control and support capabilities for those forces.

We must at all times structure our overall U.S. military capability in conjunction with those forces which are possessed by our allies, to insure that we can prevail in a worldwide conflict should it ever arise with the Soviet Union.

That drives the outer bounds of capability we must achieve. We also know that our forces have been involved over the years in numerous so-called Third World contingencies. There is a tendency sometimes to dismiss those as of considerably less importance since they involve countries of lesser military capability than our most likely adversary.

We must keep in mind constantly that we face foes whose capabilities which are technically advanced and highly complex, frequently representing forces which have been provided by the Soviet Union, by other free world countries, and in some cases by our own country.

As an example, I would note that one of our key considerations and concerns over the several years that I was in the Pacific dealt with the forces that could be fielded by Iran. We had to plan for the possibility that we might find ourselves confronted by U.S. built and supplied F-14 aircraft with Phoenix missiles or by U.S. built and supplied Harpoon weapons employed against our own ships, which counted on those very same capabilities to be successful.

Finally, we have a continuing role in naval diplomacy. Our forces are forward deployed during peacetime and must be viewed as capable if they are to be conceived as credible.

MARITIME CAPABILITIES

Maritime capabilities are normally discussed in terms of numbers of forces and numbers are important. The quality of those forces is also key. If we, for example, structure a force that is of lower quality and complexity in order to achieve a force which is numerically greater, we might find ourselves unable to withstand a threat which is significantly more powerful than the one which we face today.

We must always keep in mind that readiness and sustainability of forces in hand are paramount. It is those forces which would be called upon immediately in the event of crisis and those forces which must be ready. For that reason we keep in mind the need to fund those two key areas properly, but there have been times in years past when it could be said that we have not fully faced up to the costs of ownership of the forces we have.

We think we are doing a much better job of funding those costs of ownership. It is also clear as we program for the future that we must program only for that force which we can in fact afford to sustain in the outyears.

BUDGET CHOICES

Our budget choices are, therefore, a balance of funding the four major areas of readiness, sustainability, modernization, and force structure improvement. Readiness and sustainability are clearly our priority areas. We must not overlook modernization however because current forces must still be modernized from time to time to meet the evolving threat, so a portion of our investment must go to the modernization of existing forces.

Our force structure requirements are driven by the fact that we must replace forces which reach the end of their useful service lives and, if we are to achieve a larger force structure, we must also make the necessary investment to build that larger force. We must constantly keep in mind the fiscal and ownership constraints inherent in a larger force and we strive to do so.

FUTURE WARFARE ENVIRONMENT

We must also keep in mind the future. As I noted the forces we authorize today will be with us for a long time in the future and in the case of ships, from 30 to 45 years after delivery.

Therefore we must look to what the future warfare demands are on our forces. We know that we will face a threat which becomes increasingly more complex. We know we are facing a threat wherein our technological lead, in which we prided ourselves over the years, has in fact been eaten away, in part because of the large investment in research carried out by the forces of the Soviet Union and in part because they have been able to acquire much of our technology either directly or through third parties, and finally, in an effort on their part which is targeted directly toward the very capabilities that we pride ourselves in.

We know that the forces of the future will operate in a broader battle space, that the use of surveillance, all types, will be increasingly important. We will be dealing with more complex equipment and smarter weapons. We must broaden the distribution of offensive power across the entire gamut of our force structure. We must have force levels increased over those we have today.

Let me go very quickly into today's force structure. This slide which I am not certain is very readable from where you sit, shows the kind of Navy we will have at the end of the current fiscal year, at the end of this September.

The 31 Poseiden submarines will remain in operation for some time to come and two *Ohio* class Trident class submarines will be in operation at that point in time. These will compose the warfighting capability of our strategic forces.

We will have a general purpose force structure which has, at its heart, 13 very capable carriers and 13 air wings, complemented by a force of more than 90 attack submarines and the necessary supporting surface combatants and support forces which keep those ships sustained in combat.

THE KIND OF NAVY WE HAVE

	NO. SHIPS		NO. AIRCRAFT	
	ACTIVE	RESERVE	ACTIVE	RESERVE
BALLISTIC MISSILE FORCE	38			
33 SSBN'S				
5 SUPPORT SHIPS				
BATTLE GROUP FORCES	124		1350	152
13 CARRIERS WITH 13 AIRWINGS				
27 CRUISERS, 84 DESTROYERS				
ATTACK SUBMARINE FORCE	96			
5 DIESEL, 91 NUCLEAR SUBS				
AMPHIBIOUS WARFARE FORCES	58	6	1120	215
AMPHIBIOUS LIFT				
3 MARINE DIVISIONS (+1 RESERVE DIV)				
3 MARINE AIRWINGS (+1 RESERVE WING)				
CONVOY ESCORT, PATROL FORCE	88	5	320	115
79 FRIGATES WITH LAMPS (5 NRF DESTROYER/FRIGATES)				
24 MARITIME PATROL SQDN (+13 NRF SQDN)				
6 PATROL COMBATANT				
MINE WARFARE FORCE	3		10	
3 MINESWEEPERS				
MOBILE LOGISTICS & COMBAT SUPPORT	70		53	
TRAINING, UTILITY, SPECIAL ACFT			1370	134
SUBTOTAL	478	11	4231	616
NAVAL FLEET AUXILIARY FORCE	25			
TOTAL	514		4847	

I would like to note, particularly, that on this chart we show just 11 Naval Reserve Force ships in the second column as part of our deployable combat-capable force. Those 11 ships represent the four frigates of the 1052 class which will have been transferred from the Active Forces by the end of this fiscal year into the Naval Reserve Forces as the first step in upgrading Naval Reserve Force combatant capability.

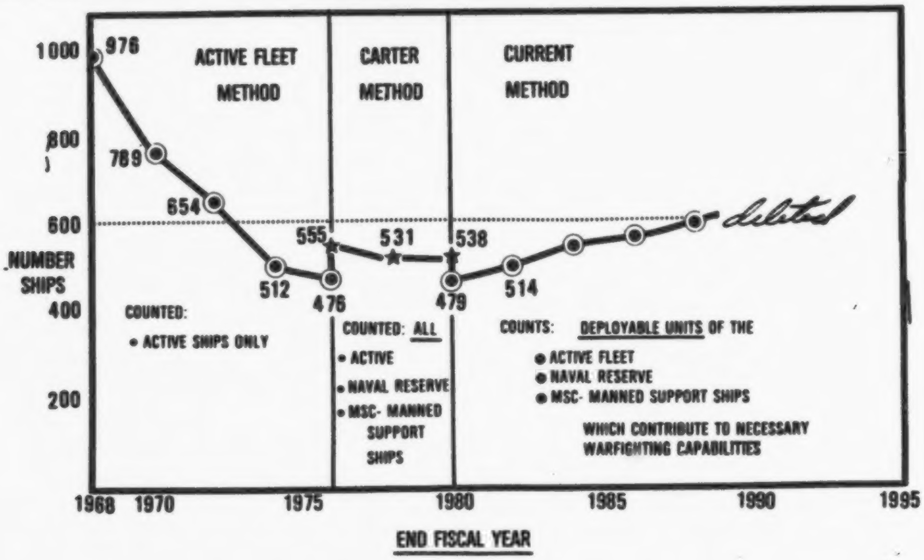
The number 11 also includes one other destroyer which is a deployable mobilization asset and six amphibious ships which are deployable.

Not shown are the last four Naval Reserve Force destroyers which are the World War II updated class which are no longer considered to be deployable units at mobilization.

Not shown are 18 mine sweepers, also of the roughly 30-year old vintage which still have a considerable capability, but would not be deployed in time of crisis.

Those 11 ships and the 25 ships which are operated by the Military Sealift Command and manned by civilian mariners are included in our total of 514 ships which you see as the force level at the end of this fiscal year.

The next chart may help clarify some of the discussion on force levels which has taken place both here and in the Pentagon and there is an understandable confusion.



NAVY FLEET SHIP COUNT

If you will note from this particular chart up until about 5 or 6 years ago, ships were counted from the active fleet only. There was then a period of time for some 4 years where all Naval Reserve Forces and all military sealift support ships were counted along with all Active Force ships.

Somewhat over a year ago, in order to clarify the confusion that existed when we counted some ships that weren't deployable, and when we counted other ships, for example, the Norton Sound—which is used to test out new weapons systems ships like the research submarine Dolphin—which has no torpedo tubes and wouldn't frighten too many people—it became clear that we should count only those ships which were clearly deployable assets of both the active fleet, the Naval Reserve Force and those military sealift command manned support ships which operate in direct support of our active fleet.

That methodology leads to the numbers which are presented to you and which have been presented both in last year's testimony and will be presented to you today and in future testimony.

NAVAL FORCES OF THE 1990's . . . WHAT CHANGE IS POSSIBLE

Technological/industrial considerations: Technological opportunities/realities; industrial base; long lead times.

POLITICAL SUPPORT: OSD; OMB/White House; Congress.

Financial considerations: Individual system affordability versus threat defeat contribution; cost growth; cost of ownership bill for expanded shipbuilding plan; top line pressure/erosion.

We must look also at future constraints on our capability. Clearly we are constrained by technology. I think I am strongly supported by Assistant Secretary Paisley when I say that there may well have been times in the past when we exceeded the bounds of logic by asking for too much at the leading edge of technology.

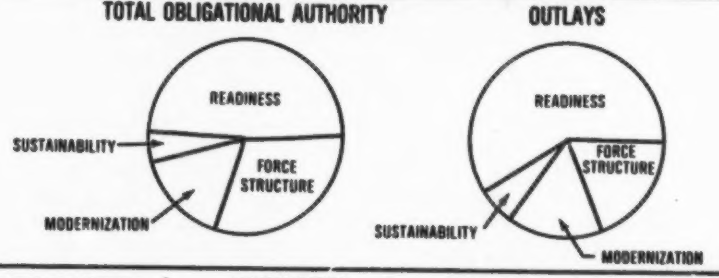
What we need to do is constrain our efforts to those things which are clearly achievable and affordable and result in systems which can be maintained and operated in the adverse environments which are the result of operating in salt air at sea and in rough weather.

We also have the constraints of the industrial base and long lead times, and Secretary Sawyer is far more cognizant and conversant with that subject than I am.

We must face the very real fact that while we have had in the last year strong political suppoort on the part of the administration, the Office of the Secretary of Defense, and the Congress, that that support is a fleeting thing. We hope it will last, but what we hope to achieve is clearly dependent upon your support as reflected in the feelings of the people in this country.

Finally, we are constrained by fiscal considerations. Not only must we ensure that every system we procure is affordable, but we must ensure that we have control of that cost growth—noninflation-oriented—with which we can directly deal. We must ensure, as I noted earlier, that we can afford the ownership of the forces that we propose, and we must recognize that there is a constant pressure to meet other priority commitments and those pressures will dictate what we may be able to achieve.

BALANCING ACT



FORCE STRUCTURE	MODERNIZATION	READINESS	SUSTAINABILITY
• SHIPS • AIRCRAFT	• R & D • SYSTEMS UPGRADE	• PERSONNEL • OPERATIONS • MAINTENANCE • SUPPLY • TRAINING • MILITARY CONSTRUCTION	• WARTIME STOCKS OF • ORDNANCE • SPARE PARTS • FUEL • MEDICAL SUPPLIES • NAVAL RESERVE

Let me display very briefly what I refer to as the balancing act. Here is how we spread resources in this current fiscal year in meeting the priorities in those four areas which I discussed earlier.

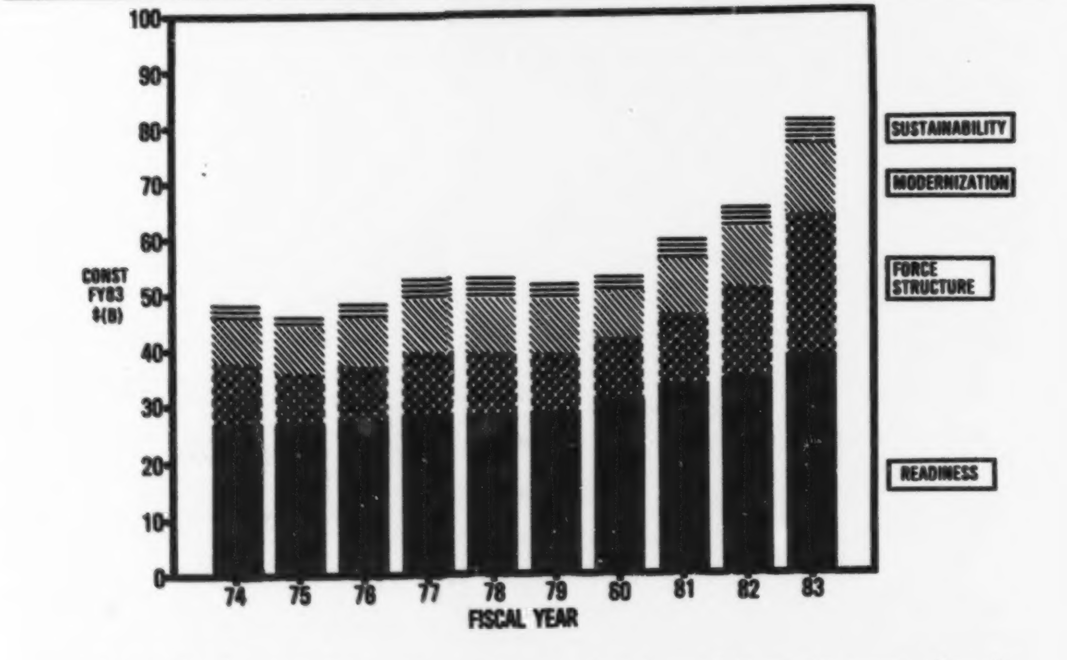
You will note that some 48 percent of the total obligational authority being requested in the President's budget for Navy use is in the readiness area. It is down slightly because this year force structure—as a result of the inclusion of the two Trident submarines and the proposed two nuclear aircraft carriers—takes a bigger portion of the pie than it does in normal years.

However, that force structure pie segment will decline very slightly in the next several years as some of those big ticket items have been bought. You will notice that in outlays the money actually to be expended this year, which consists of money in this year's budget as well as that spending out from past years' appropriations, shows a much greater proportion in the readiness and sustainability area.

Clearly I want to make that point because in any discussion of budget reductions we have to take into account the fact that any near time outlay reduction hits us where it hurts most. That is in the readiness of existing forces.

Let me note also that we are cognizant of the requirements to fund cost of ownership or readiness costs. Since 1980 there has been heavy insistence by Navy leadership that we increase the proportion of our assets in terms of constant dollars which fund readiness requirements.

FUNDING OF NAVAL CAPABILITIES
(TOTAL OBLIGATIONAL AUTHORITY)



I think the tendency to properly fund readiness is very clearly indicated on this chart; we are meeting our obligations to fund the forces that we have available.

WHAT SIZE NAVY?

Minimum essential forces (Navy programming goals): 15 carrier battle groups; 4 battleships; adequate numbers of Aegis-capable and Aegis-interactive battlegroup surface combatants; 100 nuclear attack submarines; 37 maritime patrol squadrons;

100-110 frigates; significant quantities of cruise missiles and smart weapons in the above platforms; MAF-plus-MAB amphibious lift; 30 minesweepers; support ships to match; and strategic sealift to support overall U.S. military capabilities.

Considering: Warfighting demands; contribution of allies/other U.S. forces stretched thin today; opportunities to augment.

Now, our goals as to what size Navy are driven by all of the factors that I have discussed. The minimum essential force which serves as the force goal in this 5-year plan, and the force goal which the Navy hopes to achieve by the 1990 timeframe, consists of 15 carrier battle groups, supported as noted by the four battleships which are being reactivated, and by a force structure I have shown here.

I note specifically that our force goals in nuclear attack submarines have increased and we have emphasized attaining the necessary capability in antiair warfare combatants to accompany our battle forces to make sure we can withstand the more complex forces which we know we will face.

I note also we have made a considerable effort to spread our capability among a variety of warship platforms, that effort being specifically the availability of the Tomahawk and Harpoon missiles for various ship classes.

I note also that our amphibious lift goal has expanded considerably from prior years.

As you noted in your opening statement we must resolve the precise footprints represented by the Marine forces we hope to lift. We recognize also that we have much of our current amphibious capability reaching the end of its useful life and we face a challenge not only of increasing force level capability, but also of replacing numbers of existing forces.

Finally, there has been a considerable emphasis on increasing strategic mobility support capabilities, to support our Marine and Army forces and their ability to move rapidly in response to an international crisis.

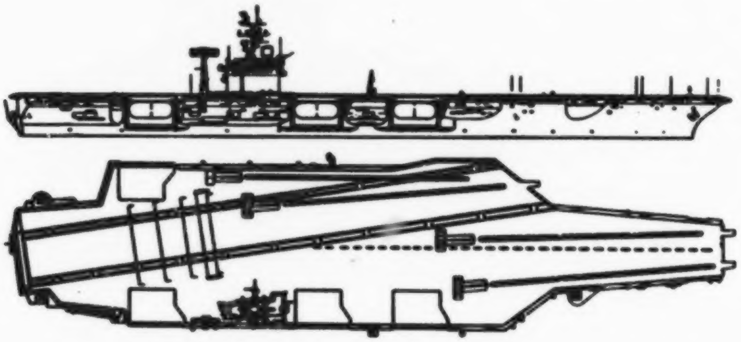
I want to discuss briefly Naval Reserve Force goals. I mentioned the enhanced capability which we hope to achieve in our Naval Reserve Force by building up to a force level of 24 modern frigates. Those frigates will be a combination of the current FF-1052 class frigate which has served so well as an antisubmarine warfare platform with our battle forces and the FFG-7 class of anti-Air Force capable frigates which is coming into our force in numbers today. In addition we plan to transition our Reserve Forces to the LAMPS-I helicopter with four squadrons and the intermediate maintenance level activities which are necessary to support those ships in the ports in which they will be based.

We are seeking to increase the air reserve capability by recognizing that many of the aircraft they now fly, while highly capable, are no longer totally compatible with the carriers they would augment in a crisis situation.

We are looking at bringing into the Reserve Forces along more modern combat aircraft at the same time those aircraft are introduced to our Active Forces.

THE NAVY TODAY

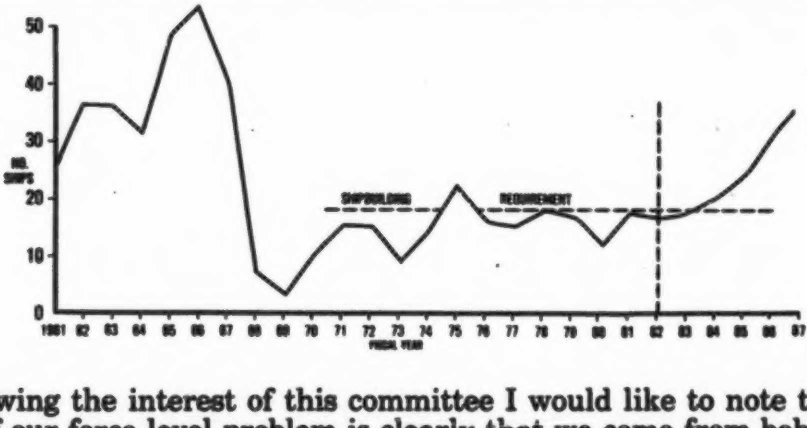
- TEN YEARS OF CONSTRAINED INVESTMENT IN NAVAL FORCES
- A REMARKABLE DECADE OF PROGRESS FOR SOVIET NAVY
- NAVIES ... CAPITAL INTENSIVE, OFTEN USED
- FORCES STRETCHED THIN
- HIGH RISK FORCE TODAY VIS-A-VIS RUSSIANS



On the next slide I would like to note just very briefly that the origin of our problem in building to enhanced force levels is clearly the fact that we are at the tail end of a decade where the investment in naval forces was constrained. At the same time the progress that we have seen demonstrated by the Soviet Navy, and the threat it represents, has increased markedly.

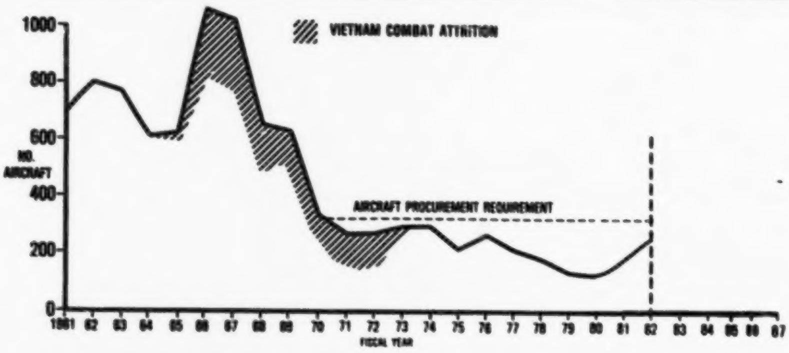
Our forces today are stretched thin, and they are capital intensive and they are expensive so we have to look very, very carefully at the kinds of forces that we build.

SHIPBUILDING HISTORY



Knowing the interest of this committee I would like to note that part of our force level problem is clearly that we come from behind in ship construction. The upswing in the out years in proposed ship construction is in part necessary to build the forces of the future and in part simply recognizing the lack of necessary investment in past years to sustain the force levels that we have today.

AIRCRAFT PROCUREMENT HISTORY



We face a similar problem in achieving the necessary force levels in our aircraft inventory, since for many years we failed to procure even those numbers of aircraft necessary to replace the peacetime attrition.

CARRIER BATTLE GROUP

Structured for total (4-D) war fighting spectrum: Subsurface; surface; land; air. Large "4-D" capable carrier air wing.

Let me touch very briefly on aircraft carriers since I know that is a major item of interest to this committee and properly so. Our carrier battle groups have to be structured to fight in what is essentially a four-dimensional warfare environment. We have over the years demonstrated the need for that capability and conducted numerous studies as to the types of forces best able to handle this particular job.

We in the Navy have concluded that the best capability of size mix resides in that aircraft carrier which has the ability to handle about 90 tactical aircraft and can go out and do the job it must in the face of known threats and in an environment we will face both now and in the future.

We have, as I noted, recognized the interest of Congress as well as our own in distributing our offensive forces over a broader number of platforms. If we could develop the necessary VSTOL capability we could clearly cut down on the complexity of some of our ships.

We could also demonstrate the ability to spread a considerable offensive power over a much broader area.

Senator COHEN: Could I stop you right there.

The Navy continues to say that if they could develop that kind of VSTOL capability, that then they could have smaller perhaps less expensive ships and more of them could be disbursed in various parts of the globe. And yet you look at the budget, and you find that ordinarily you have less R. & D. in that kind of VSTOL capability. You come around in a circle.

You reduce the R. & D. funding for the VSTOL, and then we say until such time as we get new VSTOL capability we had better stick with the bigger ships.

When do you break that cycle?

Admiral **Trost**. Your point is well taken, Senator Cohen and I think Mr. Paisley will back me up on that.

Mr. **Paisley**. Might I say something on that?

Senator **Cohen**. Surely.

Mr. **Paisley**. I don't have any disagreement with your observation. I have read a lot about what has been done in the past in this area and there was a tremendous amount of R. & D. money spent. One has trouble identifying the end result in a factual, real program. We are putting together a joint program with the Air Force and the Army for a VSTOL program that is going to be in fact a real hardware program.

The Department of Navy's main mission that we are trying to address is a marine requirement. We will be bringing forward to you this structured program in the very near future.

I might say that it has been a very difficult process pulling this together, and the fact that we are able to pull together a joint service program at this time is very gratifying to me because I have been working on it for quite a while.

You will see a structured, real program brought forward in the near future.

Senator **Cohen**. You may continue.

Admiral **Trost**. We have been remarkably unsuccessful in maintaining the R. & D. dollars in the VSTOL line that have initially been programed as the Navy puts together its program. That has in part been our fault and in part due to outside influence.

I should note that we owe you, the Congress, a report on the various design studies that have been made about smaller carriers and that report will be coming about the middle of next week when it is due. That report will summrize the efforts of the Navy over the years, and summarize the design studies that have taken place and the conclusions as to types of platforms and utility of those platforms in the Navy's overall effort.

If I may, now I would like to touch——

Senator **Byrd**. Before you leave that, let me ask you this question: You say the VSTOL provides for a distributed force or results in less capable aircraft based on more numerous and less survivable platforms.

Now when you use "less survivable platforms," I assume that you are comparing the total of the more numerous smaller carriers with the total of the larger carriers as well as considering the survivability of a large carrier vis-a-vis one large carrier vis-a-vis one small carrier?

Admiral **Trost**. That is correct. As you know, Senator Byrd, we state our requirements we have in terms of a minimum war fighting capability which consists in our judgment of 15 large deck carriers—to do the basic mission task which develops from our national strategy.

In addition thereto we could certainly make use of a number of smaller decks which would, granted, have a lesser capability. The VSTOL aircraft that we can envision today would be individually less capable than the current conventional takeoff and landing tactical aircraft. There is no question of that.

We would, however, gain on some of our smaller surface platforms if we could enhance their capability with a proper VSTOL aircraft of adequate characteristics, proper capability, because we would then be able to have a sea based tactical air capability in areas where it will not otherwise be present.

Thereby our overall capability could be enhanced, but we would be doing so with individually less capable aircraft and on platforms which are less survivable than the big carriers.

Senator Byrd. That is what I was interested in, survivability. The survivability is greater in the large carrier vis-a-vis the small carrier, but also the survivability, as I understand it, will be greater in the total number of large carriers versus the total number of small carriers?

Admiral Trost. That is our judgment, sir.

Senator Byrd. Do I understand this chart correctly when you say that the 40,000-ton smallest platform now needs to become 56,000, and you can't use a 40,000-ton one?

Admiral Trost. One can build an aircraft carrier, or if you look at the constraints of the deck size needed—able to catapult CTOL aircraft and bring CTOL aircraft back aboard, of approximately 40,000 tons—to accommodate that mission in its most basic sense.

If you now add the necessary protection against torpedos, protection for magazines and other necessary structure increases, you end up with a platform of minimum size of about 56,000 tons to have a reasonable chance of survivability in the current threat.

Senator Byrd. As a practical matter, do I understand it correctly, the 56,000-ton carrier is about the smallest that you could realistically expect to use?

Admiral Trost. That is correct. The design for the so-called CVV was about a 60,000-ton carrier, which encompassed the capability we discussed here regarding survivability and the necessary sustainability in terms of its ability to carry sufficient ammunition as well as fuel for the aircraft. That becomes about a minimum practical size.

Senator Byrd. The 40,000-ton carrier would not be practicable if you are going to consider the self-protection that is necessary?

Admiral Trost. That is correct.

Senator Byrd. Thank you.

Senator Cohen. If that is the case, you wouldn't recommend that we go back and revive the *Oriskany?*

Admiral Trost. That proposal, as you know, was one that would give us the *Oriskany*—about 45,000 tons—and it would provide a capability as a contingency carrier with an ability to augment current forces.

Senator Cohen. If I understand you correctly, and let us not get into the debate, you are saying that if you want to build 40,000-ton carriers you must accept those risks. We recognize that. But you can't have it both ways. You can't then say, last year it was a top priority to have the *Oriskany,* that it is vital to the Navy's survival that we have it out there.

The testimony was in favor of *Oriskany* over and over again and it became a battle between the House and the Senate, and suddenly we had such a premium placed on the *Oriskany*. But it is just as vulnerable as any 40,000-ton new light carrier coming off the line, isn't it?

Admiral **Trost**. I would say that is essentially correct. The *Oriskany* does not have the capability to handle today's aircraft. It is somewhat more survivable than the 40,000-ton design would have been because it was designed with compartmentalized blisters, but it does not have the ability to handle the aircraft in today's inventory that one want would for a carrier of the future. It would be constrained to aircraft such as the A-4, for example.

Mr. **Sawyer**. Just to make one comment, Senator. *Oriskany* reactivation would be approximately a $500 million project and new construction of a 40,000-ton carrier, just based on the studies and where we are right now, would something in the vicinity of $1.3 or $1.5 billion. So there is a difference there.

Senator **Cohen**. Let me go back. Prior to your coming we had an original estimate, I think, for the *Oriskany* reactivation of under $300 million. In about 8 months' time it jumped to $500 million or close to $600 million and that was not even getting it out of the dock.

That is just a once-over look. If experience has been any guide to the future, it was likely to go much higher than that once they started to really reactivate the *Oriskany*.

Second, with respect to the $1.1 billion for a 40,000-ton ship: What is the projected cost for the big deck, the two new aircraft carriers? What do they go for?

Mr. **Sawyer**. The two carriers requested in this year's budget are nuclear powered and under series procurement; I believe their individual price would be approximately somewhere around $3.3 billion.

Senator **Cohen**. I am not suggesting we ought to use the light carriers as a substitute for the big decks, I won't support that concept, but I still think there is a role to be played by some of the smaller decks, if we in fact have a new VSTOL capability.

I understand that the problems with the VSTOL aircraft that we have today largely concern the fuel consumption and the fact that you take more fuel than you do ammunition and payload. Hopefully, R. & D. money is going to correct that problem. But I am not satisfied, frankly.

I read this morning's paper and find again that there is some serious concern whether or not even this budget is going to be enough to meet the kind of threat that we face. Sitting through the threat briefings that we have had over the past few weeks, and given the momentum and the design of the Soviet buildup, frankly I am not satisfied that a 600-ship Navy, no matter how it is configured, is going to be enough.

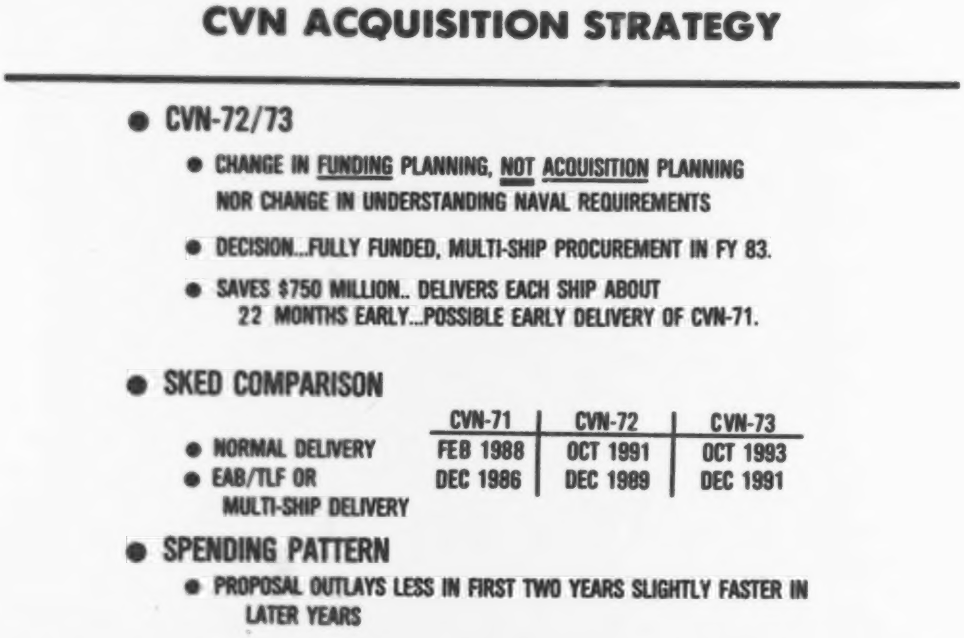
I just point out that there are a lot more areas where we have to be concerned, where we are going to face a challenge. We can't do it all with big aircraft carriers; we simply don't have that much money. We are going to need to have more force in the lower threat areas, and maybe this offers an option.

Senator Byrd supported the committee last year in our decision to spend some of the money for small carriers because we weren't getting a response from the Navy. I think at this point, at least, he is opposed to the construction of smaller carriers because of the factors you bring out, that they are less capable and less survivable.

Nonetheless it seems to me that as policymakers, of a minor degree perhaps in the whole scheme of things, we ought to at least be in a position to pass judgment as to whether we have to have more ships on a more widely distributed basis. We may have to accept some changes as to whether they are survivable or not.

Frankly, I am not sure any aircraft carrier is survivable, after I see the kind of things I looked at last week.

Admiral Trost. Any naval force is at risk and is to be placed at risk. If you don't have a capable naval force, you have capitulated without a chance to prove if it is survivable or not.



CVN ACQUISITION STRATEGY

- CVN-72/73
  - CHANGE IN FUNDING PLANNING, NOT ACQUISITION PLANNING NOR CHANGE IN UNDERSTANDING NAVAL REQUIREMENTS
  - DECISION...FULLY FUNDED, MULTI-SHIP PROCUREMENT IN FY 83.
  - SAVES $750 MILLION.. DELIVERS EACH SHIP ABOUT 22 MONTHS EARLY...POSSIBLE EARLY DELIVERY OF CVN-71.
- SKED COMPARISON

	CVN-71	CVN-72	CVN-73
• NORMAL DELIVERY	FEB 1988	OCT 1991	OCT 1993
• EAB/TLF OR MULTI-SHIP DELIVERY	DEC 1986	DEC 1989	DEC 1991

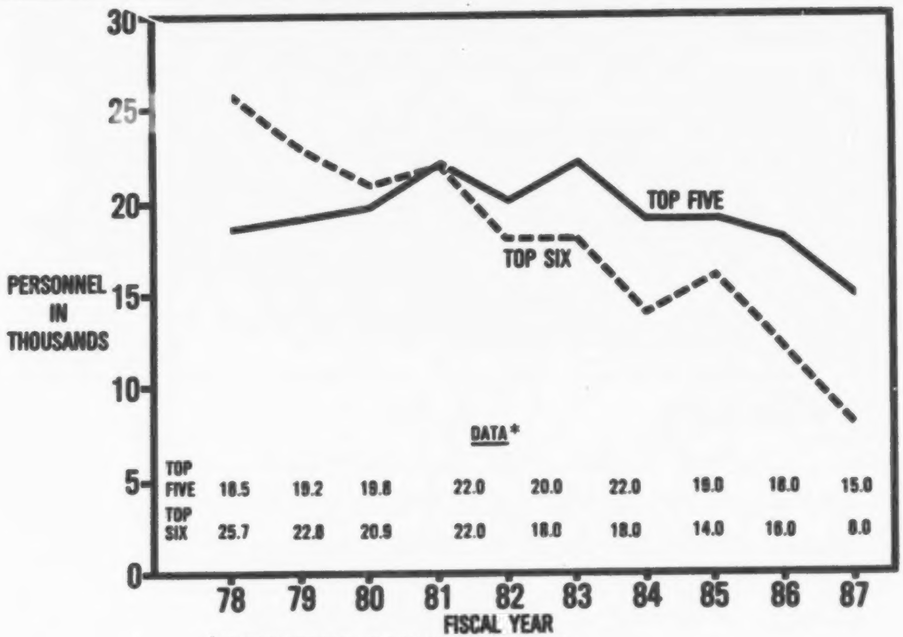
- SPENDING PATTERN
  - PROPOSAL OUTLAYS LESS IN FIRST TWO YEARS SLIGHTLY FASTER IN LATER YEARS

Let me turn now very briefly to the CVN acquisition strategy. I believe this is a major item of interest to the committee. As you know, the current budget before you does contain a proposal to build and fully fund two CVN's, *Nimitz* class CVN's. I would like to touch briefly on the two major factors of this acquisition.

One is that it is a way of saving defense expenditures in the long term. The procurement aspects I would leave to Mr. Sawyer to discuss.

I would note from the military side that this particular procurement strategy would give us two large decks, each 22 months earlier than otherwise delivered, and so from a military standpoint it has a very clear advantage in addition to that of substantial savings which could accrue from this procurement strategy.

There are a number of other issues which I could touch on in the force level area and I will do so in response to your questions if you choose, sir.



PETTY OFFICER SHORTFALL

*FY 1982 THROUGH FY 1987 DATA IS PROJECTED

I would like to note very briefly that the issue of being able to man the force levels that we have discussed has come up quite frequently, both within the administration, and in-house Navy, as well as here in the Congress. I would like to note that we have a major problem which I am not certain has been fully described or fully understood.

We do have the ability to man today's forces but we do have an experience level shortfall in today's forces. The shortfall which is depicted in this slide is expected to decrease to near zero by the time we achieve that nominal 600-ship level.

We are confident that we can man the forces that we are projecting with qualified personnel based on the following factors. We have been able for nearly 27 months now, to achieve our full recruiting goals. Now, granted the economic conditions in the country might change and the support of the Congress which has been so critical to our current success could change, all of the other indicators are positive.

Our retention is up markedly, and I note it has been Congress support both in recognition of the value of military people as well as their support in providing pay comparability, and certain special factors such as sea pay which have made a big difference.

We think we have turned the corner in our officer and enlisted personnel retention and we have the base to add those additional 60 or so thousand personnel required before the end of this decade to properly man our ships.

I also note that the general attitude within the Navy has improved markedly as a result of the very strong congressional support I noted earlier and I would urge that this committee, and the Congress as a whole, recognize the importance of their efforts and recognize also that stability in those efforts is important.

It can't be a one-time shot and then pulling away of the rug, because we will simply topple the very fine house that we are starting to build.

Senator BYRD. You mean the top five pay grades?

Admiral TROST. No, Senator, I really am referring to the top six, which includes third-class petty officers who have a basic technical capability. They are sort of new to the leadership world and we differentiate between the two, but if one looks carefully at the technical and leadership capability to support those ships, it really resides in the top five.

The top six is important because therein lies the base and the potential for adequate manning in the future.

Let me also note that we place quite a premium on stability in our civilian personnel levels. Civilian personnel for the Navy are the key to the readiness of both our current and future forces. We therefore emphasize heavily the need to contract out capabilities wherever that is feasible, so that stability of most civilivan positions is assured but also that increased readiness can be achieved through economies and efficiencies.

Let me just conclude where I see us going in the nineties. We do anticipate, given your support, there will be a significant amount of new hardware, ships, aircraft and supporting equipment in the Navy. There will be new type platforms, but we are definitely, as I have noted, an evolutionary organization as opposed to one which can be revolutionary in its concepts. It simply costs too much to throw away what you have and decide to do something totally different.

We intend to strongly improve our sustainability posture based on current priorities, and we hope to overcome some of the relative lead that we see the Soviets enjoying at the present time.

I think it is clear, on the part of all concerned, that we do need a strong maritime posture, that we do need an enhanced capability for this Nation to survive against the threat.

I think we would all agree that it is our joint responsibility to get on with building that capability.

That concludes my statement, sir.

[The prepared statement of Vice Adm. Carlisle A. H. Trost, Director, Navy Program Planning, U.S. Navy, follows:]

PREPARED STATEMENT OF VICE ADM. C. A. H. TROST, DIRECTOR, NAVY PROGRAM PLANNING

INTRODUCTION

I am pleased to have the opportunity to appear before this subcommittee to testify about Navy Force structure planning.

Our Navy Force structure planning is based on a careful evaluation of the capabilities necessary to meet the roles and missions assigned to our Navy and Marine Corps Forces in support of U.S. national policy and strategy. U.S. political, economic and military policies are influenced by several key factors: Our desire for a world in which peace and political stability are a reality; by our increasing economic interdependence with other nations of the world; by our heavy reliance on overseas sources for critical raw materials, including a substantial portion of our current energy supplies; by regional political and economic instabilities in many areas of the world; and, by the challenge and the threat posed by an increasingly militarily capable adversary, the Soviet Union. These factors in turn dictate our military strategy, a strategy which has as a key and essential ingredient the requirement for a strong maritime strategy.

Our Naval force planning rests of a U.S. maritime strategy which is straight forward and coherent. In his annual report to the Congress, Secretary Weinberger stated succinctly that it is the policy of the current administration to restore and maintain maritime superiority. Maritime superiority is fundamental to the achievement of the national military objective of this nation. We must have the capability, in peace or in time of crisis, and in conjunction with other U.S. military and allied forces, to utilize or establish command of the seas when and where our national interests require. If challenged, we must be able to prevail in those areas vital to our interests. Specifically, U.S. maritime strategy requires that we have a capability to:

Preserve access to our overseas sources of critical materials, our trade markets and our friends and allies.

Maintain a survivable, capable sea-based nuclear strategic deterrent.

Keep on the sea lines of communication which permit the United States to maintain a credible forward deployed posture oversea as part of our forward strategy.

Provide a counter to the growing political, economic, and military threat posed by the Soviet Union.

Maintain forces forward deployed to contribute to regional stability and to provide a flexible response in time of regional threat or crisis.

Project U.S. or allied power ashore if required.

Provide a strategic mobility capability to move other U.S. military forces when required.

Operate offensively on a global basis, capitalizing on the geographical disadvantages of our adversaries.

Sustain a level of fighting in wartime sufficient to contain initial enemy actions, and then to gain advantage and ensure eventual U.S. victory, in either a short or a long war.

Retain strong residual forces for war termination

And to influence the terms of peace.

A consensus clearly exists with regard to our maritime strategy and the capabilities required to implement that strategy. In addition to Secretary Weinberger's statement in the fiscal year 1983 Defense report, to which I referred earlier, we were highly encouraged by the "sense of Congress amendment" in section 782 of the 1982 Defense Appropriations Act. This amendment makes clear that Congress recognizes and understands the important roles which must be carried out by our naval forces, supports a larger and stronger American Navy as an essential ingredient of our Armed Forces, and, that the Congress expects and demands that our Nation have naval forces superior to any adversary who might challenge us. Or, as stated by Admiral Hayward, chief of naval operations, "clear maritime superiority when our allied are considered in the balance."

The naval force planner is thus faced with a clearly stated requirement for a larger and more capable Navy which will fulfill the need for maritime superiority. Since we are rebuilding our force structure from a reduced base, and, when viewed against the very impressive naval force growth and momentum achieved by the Soviets during the past 10 years, the task of restoring maritime superiority will be a challenging one. Nonetheless, there is strong consensus among civilian and uniformed Navy leaders about the kind and size of Navy we need to execute our maritime strategy.

The kind of U.S. Navy required to implement the maritime strategy of this Nation—to maintain credible strategic nuclear deterrence, to be able to prevail in a worldwide conflict with Soviet maritime forces, to respond to "third world" contingencies, and to carry out peacetime naval diplomacy—must incorporate the following characteristics:

For strategic nuclear deterrence . . . survivable, reliable, and alert forces; long-range and accurate weapons; and, two-way command and control.

For worldwide conflict with Soviet maritime forces . . . forces that can win in a three-dimensional environment; against a dense and sophisticated threat; in ocean areas where recognizable battle lines do not exist and the element of maneuver is a two-edged sword—having offensive and defensive attributes—in naval warfare; where the problem of surveillance is more difficult by an order of magnitude than in the land environment; and forces whose ultimate aim is to strike decisively from forward positions while protecting rear area sea lines of communications.

For "third world" contingencies . . . forces in forward positions in a high state of readiness; where rapid deployment—by sea and air of reinforcing units is of critical importance; against a threat not particularly dense but often sophisticated with great "staying" power; and, where the presence of non-belligerents can complicate naval warfare significantly.

For peacetime naval diplomacy . . . forces that are forward deployed and possess credible and relevant capabilities to project power. War deterrence and protecting our interests are the goal and there is a lot of "Waterfront" to cover.

FORCE STRUCTURE PLANNING

In planning a Navy with these characteristics, we acknowledge that we are faced with a principal adversary who will continue to outnumber us substantially. Recognizing this factor and the contributions of other U.S. military forces and of our allies, we base our force structure judgments and investment strategy on a number of key principles:

Control of the air remains an immutable imperative of successful naval operations. Critically, it is our continued ability to control the air that guarantees the Soviets they are forever exposed to being placed at an extreme disadvantage. Hence, there remains the continued essentiality of sea-based tactical air power, as represented by our carrier battle groups.

Flexibility of naval forces is the sine qua non to establishing maritime superiority. Since our force levels do not provide us the opportunity to carry out a naval strategy that permits us to dominate vital sea areas simultaneously, flexibility is critical to our being able to move from one vital ocean area to another with whatever naval force deemed required for the circumstance presented, and in choosing the time and place of the next encounter.

Effective distribution of offensive power is a further principle underlying our force posture objectives. The greater the degree of distribution, the more we enhance our striking ability, complicate the enemy's defensive problems and dilute the effectiveness of his offensive forces. Hence, our emphasis on the battleship reactivation, which has the potential of becoming the most effective offensive surface combatant in any navy today excluding our carriers. Likewise our program to install vertical launch Tomahawk in the *Los Angeles* Class submarine, as well as to give virtually every surface combatant its own cruise missile capability, will assure proliferation of our offensive options. The long-range Cruise missile represents probably the next great breakthrough in naval warfare, both for striking other ships at sea as well as vital naval targets ashore.

The force multiplier principle is a critical element in our investment strategy, one that helps assure us that we can operate successfully in a highly sophisticated and complicated warfare environment. Hence, we must dominate electronic warfare, develop survivable surveillance systems, coordinate and integrate information through the employment of effective and survivable command and control systems, and frustrate and mislead the enemy through the most perplexing countermeasures.

The robustness of ship and weapons systems design is important if we are going to operate in hostile environments and survive, remaining functional in the face of battle damage. The characteristic of robustness demands redundant sturdy systems and components. They do not come cheap—which might help explain why the U.S. Navy is so often perceived to have a penchant for larger ships with their concomitant higher costs. We must be able to go in harms way—and return the victor.

Lastly, we seek to optimize the employment of smart weapons, capitalizing on new technologies available and striving to maintain a technological edge over any potential adversary. Hence, more and more of our design effort goes into the employment of smart weapons with high degrees of accuracy and kill probablility in preference to investing heavily in platforms that go faster, higher, and farther.

In terms of numbers, the chief of naval operations has stated that in his professional judgment "fifteen carrier battlegroups are essential if we are to say again with confidence that we have attained a position of maritime superiority." Further, additional mid-range goals of the 600-ship Navy—displaying the characteristics and reflecting the key principles I have discussed—consist of the following capabilities: 4

battleships; adequate numbers of Aegis-capable and Aegis-interactive battlegroup surface combatants; 100 nuclear attack submarines; 37 maritime patrol squadrons; 100–110 frigates; significant quantities of Cruise missiles and smart weapons in the above platforms; MAF-plus-MAB amphibious lift; 30 minesweepers; support ships to match; strategic sealift to support overall U.S. military capabilities.

Navy force structure planning must address more than the number of ship and airplanes required for maritime superiority. Of highest priority, we must plan for the readiness and wartime sustainability of the naval forces in being. Unless "day one" readiness and wartime stocks of munitions spare parts and medical supplies are in hand and our untis are properly manned and trained, we cannot successfully implement the maritime strategy I have discussed. The need to balance the demands of the future against current preparedness is ever present in our planning process. We must plan for continued modernization of our weapons to ensure technological superiority over a threat whose sophistication and numbers continue to grow. In addition, we must purchase the necessary ships, aircraft, and equipment to replace those retired due to age, while also striving to increase our force levels to recognized requirements. There is no precise way to measure the cumulative effect on military capability of the dollars spent on readiness, sustainability, force structure, and modernization, but we believe that our fiscal year 1983 budget achieves significant and balanced improvement in all four categories.

I wish to emphasize that we do consider carefully and place heavy reliance on the contribution of other U.S. military forces and of our allies in arriving at the capabilities just described.

The industrial capacity to build and sustain these forces has been present in the recent past and should again be available if the business community sees commitment on the part of our Government to attain long-term procurement objectives. Stability in force planning is extremely important.

NAVAL RESERVE FORCE STRUCTURE

The capability of our Reserve forces—surface, air and support—is an important element in our overall force capability. The Navy has made impressive inprovements in Naval Reserve readiness over the past several years and further qualitative improvements are receiving strong emphasis.

Our long-term program for the surface Naval Reserve is to have a force of at least 24 new or nearly new ASW frigates with LAMPS I ASW helicopters. The first two *Knox* FF–1052 class frigates were transferred to the Reserve program early this year. More will follow, along with a number of the first *Perry* FFG–7 class frigates. There will likewise be a replacement of the 22 old minesweepers with new mine countermeasures ships; the final number has not been determined. Naval Reserve shore intermediate maintenance activities are already operating and more will be opened in later years to support active and Naval Reserve ships.

SCN ASPECTS OF FORCE STRUCTURE

The fiscal year 1983 SCN budget and associated 5-year plan represents a major increase in the shipbuilding program, when compared with those submitted in the past several years. We are proposing new construction of 133 ships over the next 5 years. Of these, 60 will be major combatants. A ship construction program of this size, carried to its conclusion, will provide the sustained growth of the fleet toward the goal of the 600-ship Navy.

This budget and 5-year shipbuilding plan contains many qualitative and quantitative changes from the plan of last year. It adds 10 *Los Angeles* class SSN–688's nuclear attack submarines; accelerates *Nimitz* class nuclear-powered aircraft carrier deliveries of CVN 71/72/73; adds three DD–963 *Spruance* class destroyers; continues with FFG–7 *Perry* class frigates; advances the LHD–1 to fiscal year 1984; acclerates the mine countermeasures ships and adds a new minehunter ship program; adds 11 civilian-manned fleet oilers; adds 10 other auxiliaries; introduces the Swath hull ocean ASW surveillance ship; and adds 2 hospital ships.

The strength of this SCN plan lies not just in the number of platforms to be procured, but more importantly in the broad qualitative improvements provided to our total warfighting capabilities. Construction of the CG–47 Aegis class cruiser must continue at an accelerated rate, for this class provides a critically needed battle group capability against current and projected Soviet anti-ship cruise missiles, while adding the Tomahawk cruise missile to the battle group offensive power. The Aegis/SM–2 weapons system will join the fleet with the commissioning of USS *Ticonderoga* (CG–47) in January 1983. The Aegis ship, with its superb and proven phased-array radar offers the battle group a dependable counter to the enemy's ever-increasing capability to coordinate high density air attacks. The SM-2 missile with significantly improved kinematic capability enables us to enlarge further the battle space above the carrier battle group, enhancing force survivability in the highest threat areas.

Ticonderoga is about 85 percent complete. Seventeen of these high quality ships are included in the 5-year-plan.

The design of the new multi-purpose class destroyer DDG-51 (DDGX) continues, and we will begin construction in fiscal year 1985. The ship is conceived to interact synergistically with the CG-47 Aegis cruisers at less cost than the CG-47, but with considerably more open-ocean capability than the *Spruance* class destroyers, which lack meaningful area air defense systems.

This 5-year plan includes construction of two large deck nuclear powered aircraft carriers. Clearly, the fact that we are seeking authorization for two carriers in one fiscal year, a major alteration to the budgeting strategy from last year, will be a matter of special interest to the Congress and this subcommittee. In considering this authorization request, it is important that the Congress appreciate that this alteration has not been brought about by any change to our understanding of the naval requirement, but rather as the result of the application of a new business strategy—a fully funded, multi-ship procurement. By contracting for two CVN's in tandem, we are planning for major production efficiencies, seeking to shorten the normal 7-year production time by about 2 years for each CVN and saving almost three-quarters of a billion dollars. In my judgment, 15 carrier battle groups are essential if we are to say again with confidence that we have attained a position of maritime superiority. The carrier battle group continues to epitomize those key characteristics which I discussed earlier—assured domination of the air, added fleet flexibility, robustness to combat damage, pure offensive power, and the potential for optimizing the employment of "smart" weapons.

The Navy is mindful of the desire by the Congress for meaningful progress in light carrier development. A report requested in the fiscal year 1982 authorization conference report is nearing completion and will be forwarded in the near future.

One of the most threatening aspects of the Soviet Naval Force is the size and quality of their submarine force. Although we maintain technological superiority in anti-submarine warfare, increased emphasis is warranted to ensure continued effectiveness against the expected advances in Soviet submarines and submarine-launched weapons.

Attack submarines remain a vital anti-submarine platform, as well as a major contributor to anti-surface warfare. Procurement of 17 *Los Angeles* class nuclear submarines over the 5 years of the program will bring us closer to our mid-range goal of 100 SSN's.

General purpose destroyers also contribute heavily to battle group anti-submarine warfare. A combination of DDG-51 class guided missile destroyers and DD-963 *Spruance* class ASW destroyers will provide affordable protection to the battle group. We are requesting three ships of DD-963 class in addition to four of the DDG-51 class over the next 5 years.

The *Oliver Hazard Perry* class FFG-7 program will be continued with procurement of 12 more ships over the 5-year period. These 12 ships added to the active force will permit us to transfer other *Perry* class frigates to the Naval Reserve, accelerating our efforts, noted eailier, to modernize the Reserve force ASW capability. A major role to be assigned frigates in the event of war. Large numbers are needed, and the proposed building profile will bring us closer to the objective of 100-110 frigates.

With the addition of the SQR-19 tactical towed array sonar (TACTAS) to the *Perry* class frigates and *Spruance* class destroyers, we gain a significant ASW capability against the most modern Soviet submarines. TACTAS extends our undersea "battle space" threefold over earlier systems, enabling the LAMPS III helicopters to engage enemy submarines at and beyond the edge of our largest battle force disposition.

Ocean surveillance ships (AGOS) add flexibility to our broad ocean area surveillance. Procurement of six of these ships is provided for in the 5-year plan. We are considering a small water-plane area twin hull (Swath) design, which would enable them to remain at sea on patrol in even very high sea states.

Reactivation of the remaining three *Iowa* class battleships is planned over the next 3 years. These are excellent weapon systems, which we expect to deliver to the fleet on time and at estimated cost. The cruise missile-armed battleship will serve as the centerpiece of the surface action group, acting as a tactical unit by itself or in support of carrier battle groups.

The first ship of the *Ohio* class SSBN has now joined the fleet and has met significant milestones in preparation for its first deterrent patrol later this year. *Ohio* demonstrated the launch of the Trident I missile this January with complete success. *Ohio* is an outstanding submarine that is surpassing its designed specifications in almost every way.

Mine warfare considerations, which were neglected during the declining Navy budgets of the last decade, are being strongly reemphasized. In the past 3 years we have been making major progress. The Navy's program this year takes significant strides toward restoring and upgrading our mine warfare capability, an aspect of naval warfare that has tremendous potential, both offensive and defensive.

Construction of mine countermeasures ships (MCM class) to provide deep ocean countermeasures capabilities continues, with funding requested for 13 ships over the 5-year period.

A new class of minehunter, the MSH-1, will be introduced in fiscal year 1984, to complement the 13 mine countermeasures ships requested.

As we build our forces, we continue to examine and extend our mine warfare planning, ensuring that this warfare area is integrated coherently into offensive battle group operations.

Marine Corps amphibious assault is unique—it is the only U.S. capability to insert significant numbers of forces ashore in a hotile environment. Adequate, survivable amphibious lift is essential.

Faced with the potential for block obsolescence of our amphibious force in the 1990's, we have pursued two separate ship construction programs in this year's plan. Construction of eight LSD-41's and introduction of the LHD-1 (LHDX) class will allow us to begin replacement of aging ships with modern vessels that can better accommodate the type of equipment the Marine Corps will need to accomplish its worldwide mission.

Procurement of the modern air-cushioned landing craft, LCAC, also continues. With its high speed and longer range, the LCAC not only improves the Marine Corps landing capability, but it also contributes to the survivability of the amphibious forces by allowing the ships to stand further offshore.

Strategic mobility capabilities have received particular attention since fiscal year 1980 as we have grappled with the unique logistic problems associated with Indian Ocean operations. The ability to move and support forces in a distant theater of operations depends on a combination of Airlift, Sealift, and Prepositioning assets. While Airlift offers tremendous advantages in terms of time of arrival, only a small fraction of our lift requirements can go by air. Sealift, while it entails longer transit times, provides throughput unmatched and unmatchable by Airlift. While our total capacity, embodied in a rather complex combination of Sealift programs, is sufficient to move the total tonnage requirements, severe problems exist in meeting the time phasing associated with any realistic reinforcement. Prepositioning of equipment in forward areas is a partial solution to the timing problem. More modern Sealift is another. Both avenues need to be pursued aggressively.

The near term Prepositioning ship (NTPS) program has been expanded to 13 ships carrying 30 days of sustainability for a Marine Amphibious Brigade (MAB). Over the next 5 years, we plan to replace the NTPS program with an expanded maritime prepositioning at sea of 30 days of combat supplies for three MABS. Originally, we planned to acquire 12 TAKXS for this purpose through a combination of new construction and conversion, but as you know, we are now pursuing a convert-and-charter alternative that will allow us to stick to our schedule for full implementation of the MPS concept while reducing costs in the new years.

MILITARY MANPOWER

One of the more important force planning considerations in regaining maritime superiority is military manpower. The Navy's military manpower, personnel, and training challenge of the 1980's is to man the growing Navy with sufficient personnel and with the proper skill mix. We will expand our force by nearly 70,000 personnel this decade in order to operate the Navy I have described earlier. Critics have doubted our ability to attract and retain a force of this size. We feel confident of our ability to do so.

The key to success in meeting these requirements is retention of trained personnel. Experience in the last 18 months indicated that we have, in fact, turned the corner in retaining our skilled personnel. The aggregate of military personnel legislation of the past 2 years contains the most significant improvements in military compensation in decades. For our Navy, the impact has been striking. This successful start must be sustained with continued improved retention throughout this decade.

The Navy personnel drain that reached its height in 1980 has been arrested. Although the serious petty officer shortfall will not be fully resolved for several years, virtually all our indicators—recruiting and recruiting quality, retention, attrition, desertion, personnel-related readiness—have improved significantly.

The major turnaround in the outlook, morale, and retention of our experienced careerists, upon which my assessment that we can man the larger Navy is based, is the result of these principal factors: First, the growing awareness by the American public of the importance of people serving their nation in uniform. Secondly, and surely the most important, has been the combined effect of 2 years worth of military personnel legislation, which I just mentioned. Lastly, the Navy leadership—from supervising petty officer up to the chief of naval operations—has been doing a very impressive job of running the Navy right. Sea duty extensions and requests for sea duty are up significantly and show a Navy on the move and proud of that movement.

As I have said, we are now turning the corner on the petty officer (experience) shortfall problems. Our inventory of skilled personnel is increasing. Despite manning a net increase of 19 new ships in fiscal year 1982, the top six enlisted pay grades shortfall will decrease by 4,000. Even while manning the increasing force levels, we project that the shortfall will decrease from the present level of 22,000 to about 8,000 by the end of fiscal year 1987. We make no assumptions about further real pay increases in these projections but do assume that the shortfall reduction is tied to maintaining compensation on a competitive basis with private sector industry and that the selective reenlistment bonus (SRB) program will be funded as necessary to retain critical skills.

Some manpower areas remain of concern—mid-grade officer and nuclear officer retention are two key areas—but we have had very excellent results from programs recently revitalized. Aviation officer retention is a good example. For the fiscal year 1981 cost of $26.4 million for the aviation officer continuation pay (AOCP) bonus enacted last year, we have retained 489 more pilots than we had forecast without the bonus. Comparing the replacement costs of these pilots—roughly $370 million—makes a very strong argument for extending this very important program beyond its current expiration date of 30 September 1982, so that we can continue to reduce our pilot deficit. We are continuing to closely monitor progress in this vital area.

Another concern in the military manpower compensation area is the congressionally-mandated change in lump-sum method of payment of the selected reenlistment bonus. SRB has been employed as an effective and flexible means of correcting specific skill shortfalls. We are concerned that this change, which restricts payments to one-half the bonus amount in the first year and the balance spread incrementally over the remaining will be perceived by the sailor as a reduction in bonus purchasing power. We hope that this action, which in the long run saves the Government no money, will not have a significant offsetting effect on other positive elements in the retention equation. If we lose career petty officers who would otherwise reenlist, we must compensate with additional new recruit accessions. The petty officers we stand to lose are those with highly marketable skills.

Over the past 2 years, Navy has made a constant effort to enhance the mobilization readiness of the selected reserve by increasing the quality and skill mix of its personnel rather than by increasing end strength. In keeping with this objective, the Navy's budget submission included a selected reserve strength of 87,600. In the 1982 Department of Defense Appropriations Act, Congress increased this end strength to 94,000.

In our current plan, this level of selected Reserve end strength would not have been reached until 1986. Because of your strong support, Navy will be able to substantially accelerate this planned growth. We will, of course, continue to emphasize manpower quality and combat capability while doing our utmost to achieve authorized numerical goals. Combat, combat unit augmentation and medical support manning will continue to receive our top priority.

The Navy is committed to developing a strong, effective selected reserve that is capable of executing its mobilization mission. The recent decision to significantly expand and upgrade the combat capability of the naval surface Reserve with the addition of modern ASW frigates is an example of this commitment. Much of Navy's planning selected Reserve end strength growth is targeted toward meeting the crewing requirements of these ships, and manning the reserve intermediate maintenance units required to support them.

Unfortunately, the selected Reserve mirrors the active Navy relative to recruiting and retaining experienced petty officers in critical skill areas. Just as in the active

Navy, however, the recently enacted improvements in military compensation should result in greater retention, and enhance our recruiting efforts.

Military manpower programed for the coming decade is matched to a growing Navy, in balance with other critical resource needs, and is attainable.

CIVILIAN MANPOWER

U.S. Navy civilian personnel play a key role in achieving our force planning objectives. Navy civilian end strength requested for fiscal year 1983 totals about 300,000 personnel. This level provides for essential readiness increases—especially for maintenance and repair—while projecting offsetting savings for economies and efficiencies such as cost-effective contracting out under the commercial activities (CA) program. The majority of the civilian employees of the U.S. Navy work in areas directly related to readiness, almost 90 percent of the fiscal year 1983 requested strength. Over 60 percent of that total are industrially-funded civilian positions in shipyards, aircraft rework facilities, ordnance rework facilities, public works centers, Navy laboratories, and the military Sealift command.

Civilian personnel are essential to the cost-effective acquisition of ships, aircraft, and weapons systems of an expanded Navy. They also perform much of the overhaul, maintenance, and repair required to maintain, modernize, and increase the readiness of our existing Navy. Specific readiness end strength increases of about 9,800 positions include a naval shipyard increase of about 5,000 positions in fiscal year 1983 which in combination with increased private sector overhauls will allow us to hold the backlog of deferred ship overhauls to a level caused by operational availability of ships. Employment at naval aircraft rework facilities will increase by about 900 in fiscal year 1983 which will permit further improvement in aircraft readiness and largely eliminate the backlog of aircraft maintenance. Supply activity staffing will increase in fiscal year 1983 by about 1,700 to allow us to proceed with supply system modernization and provide quicker response to fleet needs. There are also increases planned for ordnance activities, supervisor of shipbuilding, conversion, and repair offices, fleet activities, and investigative activities.

The fiscal year 1983 budget reflects two major efforts at economies and efficiencies which will result in planned strength savings of about 8,900 positions, offsetting the program increases noted earlier.

CONCLUSIONS

The Navy of the 1990's will witness significant amounts of new hardware entering the fleet. There will be some new type platforms and equipment. However, we will tend more toward revolutionary design rather than revolutionary changes. Ordnance and spare part inventories will improve significantly from current levels; military and civilian manpower resources will be adjusted to support the larger force. Aganist these improvements must be weighed relative gains by the Soviets as they continue their momentum toward a truly "blue water," global Navy. The U.S. Navy will be viewing individual system affordability in terms of contribution to our overall military capability.

The need to restore maritime superiority is clear. The planning for the restoration and maintenance of superior maritime forces and capabilities has been accomplished. We need now to set about the long-term task of achieving these plans.

Mr. Chairman, I trust I have been responsive to your desires in my remarks this morning. I am now prepared to address any questions you might have for me.

Senator COHEN. This is maybe one of those questions you really don't want to answer. You know the Armed Services Committee recommended the full authorization, at least at this point in time, of the President's request to the Budget Committee. What the prospect is for that figure, whether it will be sustained, is at least dubious at this point.

I would assume from your testimony that if you had to take cuts in the defense budget or the Navy budget, it would not come out of manpower and it would not come out of readiness and sustainability. Would those be your two top priorities?

Admiral TROST. That is correct. I think Admiral Hayward testified before this committee very emphatically about his emphasis on personnel. Personnel stability is really the key to anything we might hope to achieve and we can't take a cut there. It would be foolhardy for this country to take cuts in the sustainability of current forces.

Senator **Cohen**. And it is economically sort of faulty as well to start cutting the shipbuilding programs at this time, if we hope to achieve significant savings down the road?

Admiral **Trost**. That would be my judgment.

Senator **Cohen**. Admiral, are you satisfied with this 600-ship Navy? Can we regain maritime superiority with a 600-ship Navy given the military buildup of the Soviets as far as a blue-water capability is concerned?

Admiral **Trost**. I believe that a 600-ship Navy will in fact, as so many witnesses have testified, give us the capability to successfully withstand that threat. I have read in at least one statement that certainly we can't do all things at one time, nor do I really think that that is necessary in achieving this country's goals.

It is necessary, however, that we have a force that has as a minimum, the capability to withstand the worst case threat, even if we talk about sequential operations to withstand that threat. We simply cannot back down very much further in many parts of the world and hope to sustain the kind of country in terms of both national economy and our defense we have had access to overseas markets friends and allies is vital but not possible without the kind of maritime strength that is recommended by the Navy.

Senator **Cohen**. I have more questions I want to ask you and Mr. Sawyer. Why don't we proceed here.

Mr. **Sawyer**. Senator, Admiral Trost has indicated that we certainly agree, that encouraged by the general agreement between the public and the Congress that a strong maritime force is required. The major issue is what kind of force is required.

Of principal importance with procurement programs, and particularly in shipbuilding, is program stability. I believe it is extremely important that we decide together on the specifics of our program in the long range and then have the strength of our convictions to execute our acquisition strategies are completed, which support that long-range plan.

I think we are all familiar with the tendency in the past to budget for the next year and wish for the outyear, that has probably been the one central and stable element of the 5-year plans.

Unfortunately, it takes anywhere from 3 to 7 years to lay down a major ship program, and that is without extensive research and development beforehand. The succession of 1-year plans does not help the industrial base or ourselves to gear up so that we can produce economically and efficiently the end products.

Currently our program in shipbuilding is quite satisfactory. As you know, we delivered 26 ships last year and we plan to deliver 22 more this year, and 25 in 1983. We have 87 ships under construction. Of the 44 ships delivered in fiscal years 1980 and 1981 we delivered 16 early, 16 on time, and 12 late. That is not a bad batting average in my opinion.

Our 5-year plan in shipbuilding includes 133 new construction ships and 16 conversions. This does not include the convert and charter or build and charter programs which have been described in TAKX and T-5 replacement lines. In addition our aircraft procurement plans for the 5 years number in excess of 1,900 aircraft. We think the program balance among force structure, readiness and sustainability is properly proportioned.

As Admiral Trost has indicated, all of our readiness and sustainability accounts show real growth. From the standpoint of our total appropriation request we believe that is also reasonable. In the mid-1960's an analysis we performed recently showed that about 12 percent of the Federal budget went into the Department of the Navy's appropriations. Our fiscal year 1983 request represents 11 percent of the Federal budget. On the procurement side, in the mid-sixties the Department of the Navy's request and appropriation averaged about 7½ percent of Federal spending. Our request next year is for 7 percent of the Federal budget.

So in my remarks here I will focus on some of the procurement initiatives in terms we have put into place to better utilize this historically consistent program support. Acting with Mr. Paisley who shares certain areas with me, the principal end use of development as they relate into procurement production, particularly with regard to ships.

A lot has been said, and a lot of it in my opinion erroneously, about the physical capability of our industrial base to respond to the program that we have defined. Certainly there will be pinch points and problem areas at the critical vendor strategic materials point, but overall in looking downstream with regard to our base and with regard to our program it is ironic, but I think we have actually excess capacity.

Certainly that is true with shipbuilders. The current situation in the commercial shipbuilding world with regard to title II and construction subsidy, many of our shipbuilders are in bad straits. They need work. Our Navy program will provide work in terms of new construction and overhaul for about 60 percent to two-thirds of the current total payroll in the private shipbuilding industry in the United States. That is both next year and in the out years.

That is a high fraction, but it certainly is not an unrealistically high price.

We mentioned the need for stability and the programs' need for it. All of the cost saving procurement initiatives that we have started and of which you are aware and which we would like to continue, require program stability. The principal elements outlined in the initiatives I would like to touch upon because I think they are particularly relevant to my job in terms of production.

One initiative is multiyear procurement. We estimate savings of about $350 million in the 5-year program based on multiyear programs that we have identified now. We have commenced with the multiyear procurement of the C-2 aircraft and we have plans for additional multiyear contracts in fiscal year 1983. Some examples are the TAO and the fleet oiler ships, the NATO Seasparrow, standard missile, and EA-6 and A-6 aircraft, to mention just a few.

That $350 million savings of course, does not include the savings from the nuclear aircraft carrier series production. The point is that multiyear procurement should and does work in ship production. It is done all the time in Europe and Japan, and it is how commercial ships are built and ordered worldwide today.

It does require discipline. That is, discipline to control the tendency to change the design during production. This is the area that I am hopeful, in working closely with Mr. Paisley, that we can help instill stability with regard to our procurement process.

The changes will be aggregated in terms of block upgrade and carefully preplanned and programed into the procurement stream rather than allowing the never ending, constantly evolving change orders which can so destroy any program, particularly a multiyear program which requires heavy significant financial commitments up front.

Senator COHEN. Could I ask you a question along those lines?

In addition to multiyear funding, there also has been an initiative by Mr. Carlucci, as far as introducing more competition. This isn't tied directly to shipbuilding, but as we know, the Secretary of the Navy has canceled the 5-inch semi-active laser projectile and closely asssociated Seafire electro-optical fire control systems because of the significant cost growth in that particular program.

As I understand it, the manufacturer is Martin-Marietta which also manufactures the Army Copperhead, the 155-millimeter gun projectile. This is the only weapons system which would enable the Navy to fire a projectile without using active radar, and you have only one contractor, the $67,000 per round is pretty expensive, I agree.

Why don't we talk about getting competition in that field?

Mr. PAISLEY. When this problem first came up I thought I could solve it. The first thing I looked at was the possibility of going competitive on it, and the Navy did a good job of getting a data package. I looked very carefully at what the contractor is doing with the Army and what he would be doing under contract to the Navy.

My firm belief after looking at that very carefully, is that the cheapest we could bring this round in is through the present contract. The reason I say that is the Navy does not plan to procure a large number of rounds.

It would make more sense for the Army which is buying a larger number of rounds, but I don't think it makes sense for the Army either. In addition, the system requires too many funds in tooling.

I think it costs too much to bring a second contractor on board. I think the problem with the Navy procurement is that it is so small and the system is almost totally different from the Copperhead system that the Army is buying.

I personally think, and I will get into it a bit in my remarks, that there is a gun program that should be worked on. I personally have that feeling, and I plan to try to get commonality in the 155 and figure out how it can be developed, that is my personal opinion.

There has been a lot of money spent on an Army round for the 155 gun. We have probably not given that program the proper look, and I plan to make it a 1984 issue in looking at naval gunfire.

Once again in that I am fresh on the problem, I am going to try to take a fresh look at it. I don't think you can get the cost of the 5-inch guided projectile down by being competitive. I really looked at that carefully and it was the first thing I wanted to do.

Senator COHEN. All right, will you complete your statement.

Mr. Sawyer. I am glad you mentioned the subject of competition because it was the next one I was going to mention.

I think Secretary Paisley's answer is in keeping, with my ideas on the subject I believe competition can and does work, provided the quantities involved and the rate at which you desire the product is sufficiently high.

There are certainly additional front-end costs involved with producing competition, particularly later in the production cycle. For example, one of our major initiatives is introducing a second source of CG 47 construction. A key element of whether that is a good decision or bad decision frankly will be not in the concept, but in the numbers of ships and the rate at which we want those ships delivered.

If we agree that the number to be built over the FYDP should be 17 and that the rate averages 3 to 4 a year, I am convinced it is a wise and appropriate thing to do for many reasons. It is not only due to the fact that you are introducing economic competition in the outyears, but from the standpoint of broadening and strengthening the industrial base to take care of contingencies such as strikes, floods, and so forth and more importantly in preparing our industrial base to be able to address the DDG-51 which will certainly employ major elements of this technology.

The key element, and the element that I think we have to share together with this committee and the administration, is an agreement that we wish in fact and will plan to build 17 G-47 class ships in the next 5 years.

Another element which is conceptually tied into the program such as the TAKX and SL-7, is our concept that we structure our procurement programs to the end use, and that where in fact commercial approaches and commercial technology can be utilized, we should use them. After all, that is the basis of our industrial base today.

We should achieve advantages not only with lower costs, but much improved schedules and deliveries.

In business practices we have heard a lot about our new policy to try to write flexible contracts which reflect of the basic technology of where we are awarding with a given program. Thus we are not at all adverse to cost-plus award contracts where we are talking about procuring first of a kind, where there is a high risk, and where the risk can be shared between the contractor and ourselves.

In the case of mature programs, and again using the earlier precepts where we are going to minimize uncontrolled change and proceed only in a very deliberate fashion with regard to changes, we would like to see those share lines tightened up in fixed-price incentives contracts to at least 50-50.

We can share the risk and the contractor is incentivized to deliver his program under schedule. We have introduced recently some contract incentive for early delivery. For example you are aware of a contract modification we recently negotiated with Newport News shipbuilding to incentivize delivery of the *Teddy Roosevelt* (CVN-71) by as much as 14 months early. In that program the contractor receives a share, in this case 20 percent of what we estimate to be the total savings by such an early delivery.

Generally we hope to be a good client to a good contractor and be a very tough contractor to one who is not so good. We would like to, and plan to introduce prior performance as a criterion contractor in selection, as opposed to awarding a contract based only on the lowest price in our major procurements.

Finally, we intend to keep close working relationships with our contractors, the ones involved at the front end of the process as we evolve our new ship programs. In fact, we have made provisions in the last couple of years whereby on a competitive basis several yards have been involved in support roles during the contract design of the ship.

I would like to just complete by stating that at the present time I am pleased to state we have no significant contract issues outstanding with any of our Navy shipbuilders today. This includes the issue with Electric Boat which at this time last year had been receiving a considerable amount of publicity and controversy.

The situation both with regard to Electric Boat's production and performance and with regard to our status on the issues and relationship have improved to such an extent that we have enabled ourselves to be able to make awards of contracts to them in the recent months, specifically the ninth Trident with options for two more, and more recently an award of an SSN-688 class submarine with options for two more.

That concludes my comments, Senator.

Senator Cohen. Thank you very much.

[The prepared statement of Hon. George A. Sawyer, Assistant Secretary of the Navy (Shipbuilding and Logistics) follows:]

Prepared Statement of Hon. George A. Sawyer, Assistant Secretary of the Navy (Shipbuilding and Logistics)

NAVAL SHIPBUILDING

INTRODUCTION

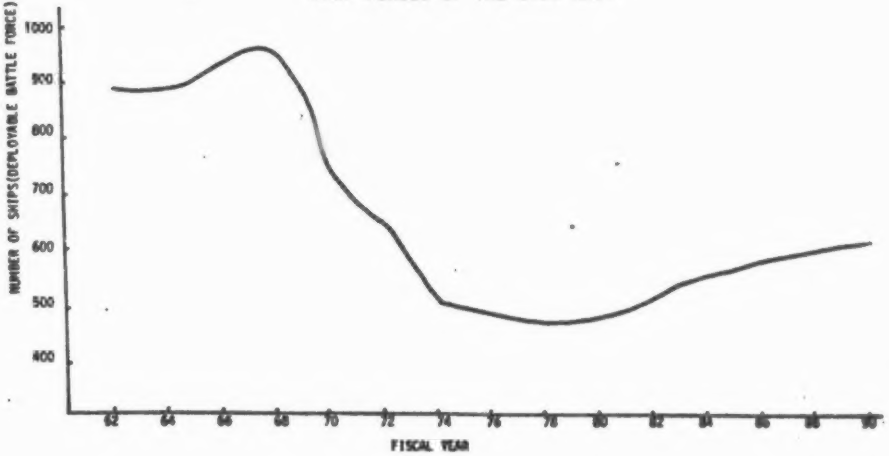
MR. CHAIRMAN, I AM PLEASED TO HAVE THE OPPORTUNITY TO PRESENT MY ASSESSMENT OF WHERE WE ARE ONE YEAR AFTER EMBARKING ON OUR PROGRAM TO RESTORE THE MARITIME BALANCE AND, IN PARTICULAR, OUR EFFORTS TO REBUILD THE FLEET. BRIEFLY, I WOULD LIKE TO PROVIDE YOU SOME PERSPECTIVE ON 1) U. S. NAVAL FORCES AND THEIR HISTORIC DECLINE IN RECENT YEARS, 2) THE CURRENT NATIONAL DEFENSE STRATEGY AS IT PERTAINS TO THE NAVY, 3) OUR SHIPBUILDING OBJECTIVES -- WHAT THEY ARE IN NUMBERS AND TYPES OF SHIPS, AND THEN CONCENTRATE ON HOW WE INTEND TO ACCOMPLISH THESE OBJECTIVES IN PRACTICAL, AFFORDABLE TERMS AND IN CONSONANCE WITH OUR CURRENT INDUSTRIAL BASE.

WHILE THE PAST YEAR HAS NOT SEEN MEASURABLE CHANGE IN THE EXISTING MARITIME BALANCE, WE BELIEVE WE HAVE ACHIEVED SIGNIFICANT PROGRESS TOWARD RETURNING THAT BALANCE TO ONE FAVORING THE UNITED STATES.

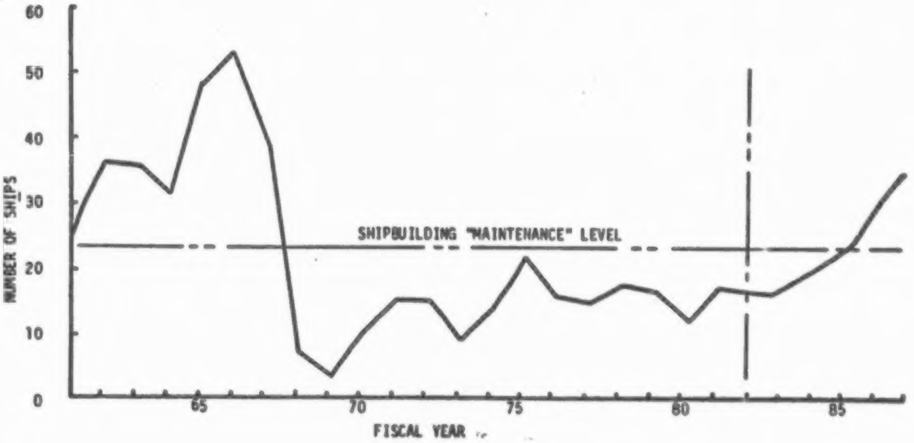
HISTORICAL PERSPECTIVE

FIRST, LET ME SET THE STAGE FOR WHERE WE ARE GOING BY EXAMINING WHERE WE HAVE BEEN. THIS FIGURE SHOWS THE SHARP DECLINE WE HAVE EXPERIENCED IN U. S. NAVAL FORCES OVER THE LAST TWO DECADES.

SHIP FORCES OF THE U.S. NAVY



ALTHOUGH A PURE NUMBERS COUNT IS NOT THE SOLE CRITERION FOR MILITARY CAPABILITY, IT IS ONE VALID INDICATOR. LAST YEAR, THE NUMBER OF OUR MARITIME COMBATANT FORCES REACHED ITS NADIR, AND, FOR THE FIRST TIME SINCE WORLD WAR II, THE CHIEF OF NAVAL OPERATIONS INDICATED TO THIS COMMITTEE THAT OUR NATION HAD INDEED LOST "MARITIME SUPERIORITY." THIS DECLINE HAS BEEN A COMBINATION OF SEVERAL FACTORS THAT INCLUDED SHIFTS IN DEFENSE PRIORITIES AND OUR PERSPECTIVE OF THE THREAT DURING THE SIXTIES AND EARLY SEVENTIES.



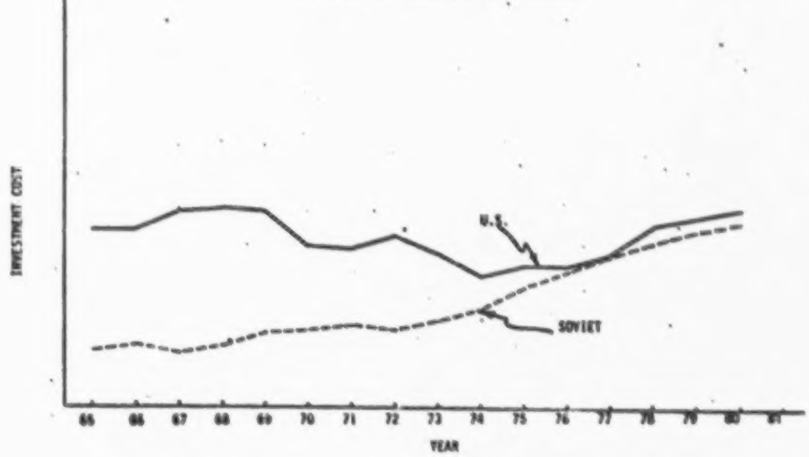
SHIPBUILDING HISTORY AND PROGRAM

IN ORDER TO MAINTAIN THE MINIMUM REQUIRED FORCE STRUCTURE, APPROXIMATELY 21-22 NEW CONSTRUCTION SHIPS ANNUALLY WOULD HAVE BEEN NECESSARY. THIS FIGURE DISPLAYS OUR PRODUCTION HISTORY AND PROGRAM. NOTE THE SHARP DECLINE DURING THE VIETNAM ERA -- A POINT FROM WHICH WE HAVE ONLY BEGUN TO RECOVER. AS A RESULT OF FAILURE TO BUILD ADEQUATE NUMBERS OF SHIPS IN THE SEVENTIES, WE MUST NOW BUILD UP UNTIL THE MINIMUM ESSENTIAL FORCE IS ONCE MORE ACHIEVED AND THEN CONTINUE TO BUILD AT A SUSTAINING LEVEL TO MAINTAIN THAT FORCE.

EXTENDING BEYOND THIS SIMPLE "SHIP-COUNTING" METHODOLOGY, ANOTHER COMPARATIVE MEASURE OF RELATIVE EMPHASIS IS INVENTORY INVESTMENT COST WHICH REPRESENTS CONSIDERATIONS OF BOTH QUANTITY AND QUALITY. OVER THE LAST 15-YEAR PERIOD, EMPHASIS IN THE UNITED STATES HAS BEEN AWAY FROM NAVY INVESTMENT. DEFENSE CUTS, COUPLED WITH A RELENTLESS SOVIET DEFENSE/MARITIME BUILDUP DURING THIS SAME PERIOD, DISSIPATED OUR MARGIN OF SAFETY AND OUR ABILITY TO OFFER CONVENTIONAL CONFLICT ALTERNATIVES. THIS FIGURE PROVIDES A COMPARISON OF INVENTORY INVESTMENT BETWEEN THE SOVIETS AND OURSELVES. ALTHOUGH SUCH A COMPARISON CANNOT BE MADE PRECISELY BECAUSE OF THE VAST DIFFERENCES IN OUR TWO ECONOMIES, IT DOES PROVIDE SUFFICIENTLY CLEAR EVIDENCE OF AN UNFAVORABLE TREND BETWEEN U. S. AND SOVIET ECONOMIC SUPPORT, ECONOMIC COMMITMENT, AND RESOURCE ALLOCATION TO NAVAL FORCES.

FOR EXAMPLE, FROM A PERSPECTIVE OF NATIONAL COMMITMENT, U. S. DEFENSE DECLINED AS A PERCENTAGE OF GROSS NATIONAL PRODUCT FROM AN AVERAGE OF 8.9% IN THE FIFTIES AND SIXTIES TO 5.9% IN THE SEVENTIES, WHEREAS SOVIET DEFENSE SPENDING OVER THE SAME PERIOD ROSE FROM 10% OF THEIR GNP TO ABOUT 15%. REVERSING THE FORMER TREND, THIS ADMINISTRATION'S PROGRAM ALLOCATES 6.3% OF THE 1983 U.S. GNP and 7.2% OF 1987 GNP TO REBUILDING OUR DEFENSES.

TRENDS IN U.S. AND SOVIET OCEAN NAVAL INVESTMENT COSTS
INVENTORY INVESTMENT COSTS



THEREFORE, I BELIEVE THAT THE EVIDENCE IS IRREFUTABLE THAT THE U.S., WHICH HAD ENJOYED A 20-YEAR ADVANTAGE IN CLEAR MARITIME SUPERIORITY PRIOR TO 1965, BEGAN TO LOSE THAT ADVANTAGE IN THE LATE SIXTIES; AND TODAY THE TWO NATIONS ARE ROUGHLY EQUIVALENT IN NAVAL STRENGTH, A SITUATION WHICH PORTENDS ILL FOR OUR NATIONAL INTERESTS.

CONCURRENTLY, OUR CHANGING ECONOMIC PATTERNS OF INDUSTRIAL ACTIVITY AND TRADE HAVE RESULTED IN OUR INCREASED OVERSEAS DEPENDENCY FOR ENERGY PRODUCTS AND OTHER CRITICAL RESOURCES. IN RECOGNITION OF AMERICA'S DEPENDENCY ON FREE USE OF THE SEAS FOR ACCESS TO OUR ALLIES, MARKETS AND RESOURCES, THE SOVIETS HAVE TAKEN ADVANTAGE OF THE ATTRACTIVE OPPORTUNITY PROVIDED BY REDUCTIONS IN SHIP FORCES. TODAY'S SOVIET NAVY IS A MODERN, INCREASINGLY CAPABLE BLUE-WATER FORCE DESIGNED TO STRIP THE UNITED STATES OF OUR MARITIME LIFELINE AND THUS THREATENS OUR VERY EXISTENCE. IN SHORT, WE HAVE ALLOWED OURSELVES TO BECOME DANGEROUSLY WEAK. IN RECOGNITION OF THE CURRENT IMBALANCE, THIS ADMINISTRATION HAS BEGUN TO TAKE THE STEPS NECESSARY TO MAKE MAJOR IMPROVEMENTS IN THE CAPABILITY OF OUR NAVAL FORCES AS A MATTER OF SURVIVAL.

CHANGE IN STRATEGY

CLEAR MARITIME SUPERIORITY MUST BE ACQUIRED. WE MUST BE CAPABLE, AS WELL AS BEING PERCEIVED AS CAPABLE, OF KEEPING OUR ACCESS SECURE TO AREAS VITAL TO OUR NATIONAL INTERESTS. MARITIME SUPERIORITY IS AN ESSENTIAL ELEMENT OF OUR FUTURE NATIONAL STRATEGY. FOR EXAMPLE, CRITICS WHO ARGUE THAT MARITIME EXPANSION WILL ONLY BE ACHIEVED TO THE DETRIMENT OF OTHER CONVENTIONAL FORCE PROGRAMS FAIL TO RECOGNIZE THAT NONE OF OUR PROJECTION FORCES WILL BE VIABLE OR CREDIBLE WITHOUT THE ABILITY TO GAIN ENTRY TO, AND MAINTAIN CONTROL OVER, THE REGIONS TO WHICH THEY WILL BE DEPLOYED. OF COURSE, MARITIME SUPERIORITY DOES NOT MEAN THAT WE MUST SEEK TO BE DOMINANT IN ALL OCEANS AT ALL TIMES, NOR ACT AS THE WORLD'S MARITIME POLICEMAN.

HOWEVER, IT DOES DICTATE A MARITIME FORCE POSTURE THAT IS FLEXIBLY STRUCTURED, EQUIPPED AND TRAINED FOR MOBILITY, SIMULTANEITY, AND OFFENSIVE COMBAT -- POSSESSING STRIKE CAPABILITY AT SEA, FORCIBLE ENTRY CAPABILITY AT THE SEA-SHORE INTERFACE, AND THE NECESSARY STRATEGIC SEALIFT TO SUSTAIN COMBAT, BOTH AT SEA AND ON LAND. THESE NAVY/MARINE CORPS FORCES ARE AN ESSENTIAL ELEMENT IN THE NATIONAL FORWARD STRATEGY. AS SECRETARY LEHMAN HAS INDICATED, WE MUST PREVAIL, IF CHALLENGED BY THE COMBINED MILITARY THREAT OF OUR ADVERSARIES, IN THOSE AREAS WHERE OUR VITAL INTERESTS ARE INVOLVED. SHOULD DETERRENCE FAIL AND CONFLICT INITIATE BETWEEN THE NAVIES OF THE UNITED STATES AND THE SOVIET UNION, WE BELIEVE IT WILL QUICKLY GRAVITATE TO ONE OF GLOBAL DIMENSIONS IN TERMS OF NAVAL WARFARE.

THIS CONCLUSION, IN SUPPORT OF NATIONAL OBJECTIVES, UNDERLIES OUR CHANGE IN STRATEGY FROM A PLANNING SCENARIO OF 1-1/2 WARS TO GLOBAL CONFLICT, AND A MARITIME FORCE PLANNING FROM 1-1/2 TO 3 OCEANS.

REBUILDING OUR NAVAL FORCES

PROGRAM GOALS

REESTABLISHING MARITIME SUPERIORITY WILL PROVIDE THE UNITED STATES THE CAPABILITY TO CARRY OUT THE FORWARD STRATEGY NECESSARY TO OFFSET ANY DISADVANTAGES OF THE ALLIED NATIONS ON LAND. UNABLE TO MAINTAIN SUPERIORITY WITH CURRENT FORCE LEVELS, WE MUST STRIVE FOR MAJOR INVESTMENT OVER THE NEXT SEVERAL YEARS IN OUR SHIPBUILDING AND PROCUREMENT ACCOUNTS WHILE IMPROVING CURRENT FORCE READINESS -- BOTH FOR NEAR AND LONG TERMS. OUR FY 1983-1987 PROGRAM, THEREFORE, CONTAINS A SIGNIFICANT INCREASE IN THE NUMBER OF SHIPS, AIRCRAFT, AND WEAPONS PROCURED FOR THE NAVY. CAPABILITY ACHIEVED FROM SUCH INVESTMENT WILL NOT COME SOON -- THERE IS NO "QUICK FIX". IT TOOK US OVER 10 YEARS TO LOSE SUPERIORITY AND IT MAY TAKE US THE NEXT TEN YEARS TO RECOVER. AS YOU GENTLEMEN WILL APPRECIATE, IT TAKES SEVERAL YEARS TO PRODUCE ONE SHIP EVEN AFTER MONIES ARE APPROPRIATED. AT THE SAME TIME WE ARE BUILDING FOR THE FUTURE, WE WILL NOT NEGLECT THE NEAR-TERM READINESS OF OUR FORCES AND THEIR SUSTAINABILITY. THUS, OUR PROGRAM STRIKES A REASONABLE BALANCE BETWEEN NEAR-TERM NEEDS AND THE LONG-TERM GOALS, ALL INTENDED TO RESTORE A FAVORABLE TREND IN THE NAVAL BALANCE.

PROGRAM OBJECTIVES

OUR PROGRAM MEETS FOUR KEY OBJECTIVES.

-- INCREASING THE OFFENSIVE STRIKING POWER OF THE FLEET;

-- IMPROVING DAY-TO-DAY FLEET READINESS AND SUSTAINABILITY;

-- STRENGTHENING OUR ANTI-SUBMARINE AND ANTI-AIR DEFENSES; AND

-- MODERNIZING OUR EXISTING FORCES WHILE MAKING MAJOR INCREASES IN THE NUMBER OF FLEET SHIPS AND AIRCRAFT.

FORCE EXPANSION -- "600 SHIP OBJECTIVE"

A YEAR AGO, WE OUTLINED A FORCE STRUCTURE EXPANSION OF SOME 30%, THE ADMINISTRATION'S OBJECTIVE TO BUILD TO 15 BATTLE GROUPS, A FORCE OF ABOUT 100 ATTACK SUBMARINES, AND A MAF + MAB AMPHIBIOUS LIFE -- THE "600 SHIP NAVY." THE PROGRAM REQUIRED ADDITIONAL AIRCRAFT CARRIERS, BATTLESHIPS, ATTACK SUBMARINES, STRATEGIC SUBMARINES, AMPHIBIOUS ASSAULT SHIPS, STRATEGIC SEALIFT SHIPS, FLEET SUPPORT SHIPS, MINE WARFARE SHIPS, AND OTHER SUPPORT VESSELS IN ORDER TO PROVIDE A BALANCED FLEET.

BECAUSE OF THE EMERGENCE OF A GLOBAL, BLUE-WATER SOVIET MARITIME THREAT, THE FORCE SHOWN IN THE ACCOMPANYING TABLE REPRESENTS THE MINIMUM NECESSARY NAVY TO AVOID TURNING ANY OF OUR VITAL MARITIME AREAS OVER TO SOVIET CONTROL.

U.S. NAVY MINIMUM FORCE

0 15 BATTLEGROUPS
0 4 BATTLESHIPS
0 ADEQUATE NUMBERS OF AEGIS-CAPABLE AND AEGIS-INTERACTIVE BATTLEGROUP ESCORTS
0 100 NUCLEAR ATTACK SUBMARINES
0 37 MARITIME PATROL SQUADRONS
0 100-110 FRIGATES
0 SIGNIFICANT QUANTITIES OF CRUISE MISSILES AND SMART WEAPONS IN THE ABOVE PLATFORMS
0 MAF + MAB AMPHIBIOUS LIFT
0 30 MINESWEEPERS
0 SUPPORT SHIPS TO MATCH
0 STRATEGIC SEALIFT TO SUPPORT OVERALL U. S. MILITARY CAPABILITIES

THE PROCESS OF DERIVING THIS OBJECTIVE HAS BEEN COMPLEX AND COMPREHENSIVE. STRUCTURING A FORCE TO MEET THREATS WORLDWIDE RESULTS IN CONSIDERATION OF MANY POSSIBLE CONFLICT SCENARIOS, ALL REQUIRING DIFFERENT NAVAL STRATEGIES. IN VIEW OF THE MANY VARIABLES, IT IS NEITHER DESIRABLE NOR POSSIBLE TO STATE WITH PRECISION THAT A CERTAIN NUMBER OF SHIPS WILL BE ADEQUATE FOR ALL PURPOSES. WE HAVE DETERMINED THAT FIFTEEN IS THE MINIMUM NUMBER OF BATTLE GROUPS NECESSARY TO CARRY OUT A STRATEGY THAT WILL RESULT IN THE PROPER MAINTENANCE OF ALL OUR VITAL INTERESTS. THE FORCE IN TERMS OF COMBATANTS AS WELL AS SUPPORT SHIPS IS DERIVED DIRECTLY FROM THIS MINIMUM NUMBER OF BATTLE GROUPS.

OUR PLAN, AGGREGATED BY THE NEW "DEPLOYABLE BATTLE FORCE" CATEGORIZATION IS SHOWN ON THE NEXT TABLE. THE COMPARABLE FORCE LEVELS IN 1970, WHEN THIS ADMINISTRATION TOOK OFFICE (FY81), AND OUR END-OF-DECADE GOALS (FY90), ARE PRESENTED IN THE CONTEXT OF A NEW ACCOUNTING METHOD WHICH FOCUSES ON OUR MOST READILY DEPLOYABLE SHIPS -- THOSE MANNED, TRAINED, AND MATERIALLY READY FOR WARTIME DEPLOYMENT. THE "SHIP COUNT OVERVIEW" GIVES YOU A SIMPLE PICTURE OF OUR CURRENT PLANS. BUT BE ASSURED WE WILL CONTINUE TO TAKE INTO ACCOUNT OTHER IMPORTANT FACTORS IN QUALITATIVE TECHNOLOGICAL IMPROVEMENTS WHICH, TAKEN IN THE AGGREGATE, COULD HAVE A GREATER POTENTIAL IMPACT ON OVERALL CAPABILITY THAN NUMBER OF SHIPS ALONE.

ACHIEVING THE 600-SHIP NAVY
BY DEPLOYABLE BATTLE FORCE CATEGORY

	FY 70	FY 81	FY 90
STRATEGIC FORCES			
BALLISTIC MISSILE SUBMARINES	41	34	43
SUPPORT SHIPS	10	7	6
	51	41	49
BATTLE FORCES			
AIRCRAFT CARRIERS	19	12	13
SURFACE COMBATANTS	233	187	216
SUBMARINES*	125 (55)	87 (5)	95 (0)
PATROL COMBATANTS	15	1	6
AMPHIBIOUS WARFARE SHIPS	97	59	61
MINE WARFARE SHIPS	64	3	16
MOBILE LOGISTIC SHIPS	48	48	67
	601	397	474
SUPPORT FORCES	85	44	53
MOBILIZATION FORCES CATEGORY A	9	9	37
TOTAL DEPLOYABLE SHIPS	746	491	613

*Diesel submarines in parenthesis

WHEN THIS ADMINISTRATION TOOK OFFICE, OUR DEPLOYABLE BATTLE FORCE NUMBERED 479 SHIPS -- BY 1983 WE WILL HAVE 535 SHIPS. OUR FIVE-YEAR SHIPBUILDING PLAN (FY83-87) SHOULD PRODUCE A FLEET OF OVER 600 SHIPS BY THE EARLY 1990'S.

THE TABLE BELOW OUTLINES OUR FIVE-YEAR SHIPBUILDING PROGRAM

FY 1983-87 Shipbuilding Program
(Fiscal Year)

TYPE OF SHIP	82 1/	83	84	85	86	87	FY 83-87 Five Year Total
TRIDENT (Ballistic Missile Submarine)	-	2	1	1	1	1	6
SSN-688 (Attack Submarine)	2	2	3	4	4	4	17
CVN (Aircraft Carrier-Nuclear)	-	2	-	-	-	-	2
CV (Aircraft Carrier) SLEP 2/	-	1	-	1	-	1	3
CG-47 (Guided Missile Cruiser)	3	3	3	3	4	4	17
CG-42 (Nuclear Guided Missile Cruiser)	-	-	-	-	-	1	1
DDG-51 (Guided Missile Destroyer)	-	-	-	1	-	3	4
DD (Destroyer)	-	-	-	-	2	1	3
BB (Battleship) Reactivation	1	1	1	1	-	-	3
FFG-7 (Guided Missile Frigate)	3	2	2	2	3	3	12
MCM (Mine Countermeasure Ship)	1	4	4	5	-	-	13
MSH (Mine Countermeasure Ship)	-	-	1	-	5	5	11
LSD-41 (Landing Ship Dock)	1	1	1	2	2	2	8
LHD-1 (Amphibious Ship)	-	-	1	-	-	1	2
AOE (Multi-Purpose Stores Ship)	-	-	-	1	1	2	4
AE (Ammunition Ship)	-	-	-	1	2	1	4
ARS (Salvage Ship)	2	1	1	-	-	-	2
AD (Destroyer Tender)	-	-	-	-	1	1	2
T-AO (Oiler)	1	1	3	4	4	6	18
T-AGS (FBM Support Ship) Conversion	-	-	-	2	-	-	2
T-AK (Cargo Ship) Conversion	-	-	-	1	-	-	1
T-ARC (Cable Ship)	-	-	-	-	1	-	1
T-AGM (Range Instrumentation Ship) Conversion	-	-	-	-	1	-	1
T-AGOS/AGOS (SURTASS)	4	-	1	-	2	3	6
T-AKRX (SL-7) Conversion 3/	4	4	-	-	-	-	4
T-AFS (Stores Ship) Conversion	2	-	-	-	-	-	-
T-AH (Conversion)	-	1	1	-	-	-	2
New Construction Ships	17	18	21	24	32	38	133
Conversions/SLEPs/ Reactivations	7	7	2	5	1	1	16

1/ Shown for information to reflect changed baseline from Carter program.
2/ SLEP - Service Life Extension Program.
3/ Acquisition of eight T-AKRXs will be completed in FY 1982.

I WOULD LIKE TO HIGHLIGHT OUR PROGRAM FOR BATTLE FORCES.

THE FY83-87 SHIPBUILDING PROGRAM

THE FIVE YEAR SHIPBUILDING PROGRAM PROVIDES FOR CONSTRUCTION OF 133 NEW SHIPS AND THE CONVERSION, REACTIVATION, OR SERVICE LIFE EXTENSION OF 16 OTHERS. THE PRINCIPAL BATTLE FORCE COMPONENTS OF THE PROGRAM ARE:

AEGIS SHIPS - THE PLAN INCLUDES ORDERS FOR 17 GUIDED MISSILE CRUISERS (CG-47 CLASS) AND ONE NUCLEAR-POWERED GUIDED MISSILE CRUISER (CGN-42). BOTH CRUISERS WILL BE EQUIPPED WITH THE AEGIS COMBAT SYSTEM, WHICH WILL ENHANCE FLEET CAPABILITIES IN AIR DEFENSE FIREPOWER. BY THE EARLY 1990s, THERE WILL BE 25 AEGIS-EQUIPPED SHIPS IN THE FLEET.

DESTROYERS - IN THIS PLAN, WE HAVE INITIATED THE CONSTRUCTION OF A NEW, LESS COSTLY CLASS OF SURFACE COMBATANTS, THE DDG-51. THIS NEW DESTROYER PROGRAM IS INTENDED TO REPLACE THE LARGE NUMBERS OF GUIDED MISSILE CRUISERS AND DESTROYERS RETIRING IN THE 1990s. THE DDG-51 WILL BE BATTLE-GROUP CAPABLE AND WILL BE CONFIGURED TO OPERATE IN ALL PHASES OF NAVAL WARFARE. THE FIRST 4 DDG-51s ARE IN THE FIVE YEAR PLAN.

ATTACK SUBMARINES - DURING CY 1981, SEVEN NUCLEAR ATTACK SUBMARINES (SSN-688) WERE DELIVERED TO THE NAVY. THIS FINE PRODUCTION RECORD IS AN INDICATOR THAT PREVIOUS CONSTRUCTION PROBLEMS APPEAR TO BE RESOLVED AND WE EXPECT THAT PRODUCTION WILL CONTINUE TO IMPROVE IN THE FUTURE. THE CONGRESS HAS AUTHORIZED A TOTAL OF 39 SSNs AND THE CURRENT FIVE YEAR PLAN ADDS 17. THESE SUBMARINES ARE A PRIMARY VEHICLE FOR THE PROSECUTION OF ANTI-SUBMARINE WARFARE AND WILL INCLUDE MODIFICATIONS FOR THE INSTALLATION OF THE VERTICAL LAUNCHING SYSTEM (VLS). THE VLS WILL IMPROVE THE OFFENSIVE CAPABILITY OF THE SSN-688.

CARRIERS - A CENTERPEICE OF OUR FIVE YEAR PLAN IS THE REQUEST IN FY 83 FOR TWO NUCLEAR-POWERED AIRCRAFT CARRIERS OF THE NIMITZ CLASS. THE ABILITY OF

THESE CARRIERS TO PROJECT POWER ASHORE AND TO PROVIDE FOR FLEET AIR DEFENSE IS WELL KNOWN. THE CURRENT PROCUREMENT PLAN INTENDS TO TAKE ADVANTAGE OF A MULTI-SHIP BUY TO REDUCE PROCUREMENT COSTS AND ACCELERATE DELIVERIES. THIS ACCELERATION WILL PERMIT THE ECONOMIC ORDERING OF SHIP EQUIPMENTS FROM SUBCONTRACTORS AND VENDORS, STRENGTHEN THE INDUSTRIAL BASE, AND DELIVER EACH OF THE SHIPS 22 MONTHS EARLIER THAN PREVIOUSLY ANTICIPATED.

AMPHIBIOUS SHIPS - A MAJOR EFFORT IN THE FIVE YEAR PLAN IS THE PROCUREMENT OF SHIPS IN THREE CLASSES OF AMPHIBIOUS SHIPPING. THESE SHIPS WILL HELP TO PROVIDE THE ADDITIONAL LIFT REQUIRED AS WE INCREASE CAPABILITY TOWARD OUR AMPHIBIOUS LIFT OBJECTIVE OF MOVING, SIMULTANEOUSLY, ONE MARINE AMPHIBIOUS FORCE AND ONE MARINE AMPHIBIOUS BRIGADE. IN ADDITION, THE SHIPS WILL ACCOMMODATE THE INCREASED REQUIREMENTS FOR LIFT OCCASIONED BY MODERNIZATION OF MARINE CORPS EQUIPMENT. THE PLAN PROGRAMS PROCUREMENT OF EIGHT LSD-41 CLASS SHIPS, 2 LDH-1 CLASS, AND THE INITIATION OF A NEW SHIP, THE LPDX. THE LSD-41 CLASS IS INTENDED TO REPLACE THE LSD-28 CLASS RETIRING IN THE MID-1980s. EACH OF THE LSD-41 CLASS WILL BE CAPABLE OF EMBARKING AT LEAST FOUR AIR CUSHION LANDING CRAFT (LCAC), A NEEDED IMPROVEMENT IN THE ABILITY TO TRANSFER TROOPS AND EQUIPMENT RAPIDLY SHIP-TO-SHORE. THE LHD-1 IS A GENERAL PURPOSE AMPHIBIOUS SHIP PATTERNED AFTER THE LHA DESIGN. IT WILL DISPLACE ABOUT 40,000 TONS; WILL BE CAPABLE OF OPERATING LCACs, V/STOL AIRCRAFT, AND HELICOPTERS; AND CAN SERVE IN A DUAL CAPACITY AS A LIGHT SUPPORT CARRIER. THE LPDX WILL BE A REPLACEMENT FOR LPDs RETIRING IN THE 1990s.

LANDING CRAFT AIR CUSHION - THE FY 83 BUDGET INCLUDES A REQUEST FOR 3 LCACs. FUNDING THIS REQUEST WILL PERMIT ADVANCEMENT OF PROCUREMENT PLANS BY ONE YEAR. THE FIVE YEAR PROGRAM INCLUDES 12 MORE LCACs THAN WERE INCLUDED IN LAST YEAR'S PLANS. THE LCAC, WHICH WILL REPLACE EXISTING LANDING CRAFT, IMPROVES OUR SHIP-TO-SHORE TRANSFER CAPABILITY BY MOVING TROOPS AND EQUIPMENT, INCLUDING TANKS, AT SPEEDS IN EXCESS OF 40 KNOTS.

BATTLESHIPS - THE FIVE YEAR PLAN CONTINUES REACTIVATION OF IOWA PLUS THE TWO REMAINING SHIPS OF HER CLASS. THESE SHIPS WILL ENHANCE THE EFFECTIVENESS OF THE SURFACE ACTION GROUPS WITH THEIR CAPABILITIES IN HARPOON, TOMAHAWK, AND 16-INCH GUNS. AT THE END OF THE PROGRAM, FOUR BATTLESHIPS WILL BE OPERATING WITH THE DEPLCYABLE FORCES.

GUIDED MISSILE FRIGATES - THE FY83 BUDGET CONTINUES PRODUCTION OF THE FFG-7 CLASS GUIDED MISSILE FRIGATES. THESE FRIGATES MEET OUR REQUIREMENTS FOR A RELATIVELY INEXPENSIVE SHIP TO ESCORT NAVAL FORCES OTHER THAN CARRIER BATTLE GROUPS. DURING THE FIVE YEAR PROGRAM, EARLIER SHIPS OF THIS CLASS CONFIGURED WITH THE LAMPS MK-1 HELICOPTER SYSTEM WILL BE TRANSFERRED TO THE NAVAL RESERVE.

FLEET OILERS - IN ORDER TO SUPPORT THE FORWARD DEPLOYMENT OF OUR NAVAL FORCES, IT HAS BEEN DETERMINED THAT ADDITIONAL FLEET OILERS ARE REQUIRED. THE TAO PROGRAM ANTICIPATES THE CONSTRUCTION OF 19 FLEET OILERS, 18 OF THESE IN THE NEXT FIVE YEARS. THESE SHIPS WILL BE OPERATED BY THE MILITARY SEALIFT COMMAND AND WILL IMPROVE THE CAPABILITIES OF THE OILER FORCE WITHOUT IMPACTING ACTIVE DUTY MANPOWER. IN ADDITION, THE TAO WILL SERVE AS A MODEL FOR OUR EFFORTS IN MULTI-YEAR PROCUREMENTS.

MINE COUNTERMEASURE SHIPS - FOR A NUMBER OF YEARS, THE U. S. NAVY HAS NOT BEEN ABLE TO COUNTER THE GROWING MENACE OF THE SOVIET DEEP-WATER MINING THREAT. THE CURRENT MINE COUNTERMEASURES PROGRAM PLANS FOR PROCUREMENT OF 24 MCM SHIPS, INCORPORATING THE LATEST TECHNOLOGY IN SWEEPING, HUNTING, AND NEUTRALIZING MINES. OUR DEEP-WATER CAPABILITY IS PROVIDED BY 14 MCM SHIPS, 13 OF WHICH ARE PROGRAMMED FOR THE NEXT FIVE YEARS. A NEW CLASS OF SMALLER MINEHUNTERS, MSH-1, WILL AUGMENT THE MCM FORCE IN HARBOR CLEARANCE OPERATIONS AND ARE INCLUDED IN THE FIVE YEAR PLAN FOR THE FIRST TIME. THE LEAD MSH IS PROJECTED FOR FY 1984 WITH 10 OTHER SHIPS TO FOLLOW IN THE 1986-1987 TIME-FRAME.

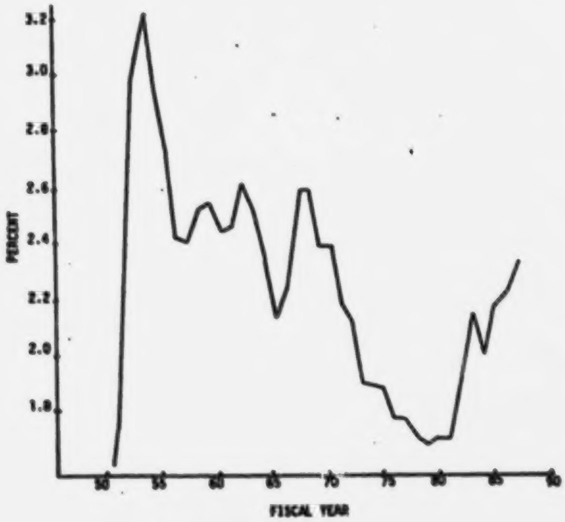
COMBINED WITH THE EMPHASIS ON BATTLE FORCES' CONSTRUCTION AND CONVERSION ARE SEVERAL SPECIAL EFFORTS. THE SHIPS FOR THE RAPID DEPLOYMENT FORCE, AND IN GENERAL, SHIPS TO BE MANNED BY THE MILITARY SEALIFT COMMAND, OFFER US THE UNIQUE OPPORTUNITY TO BUY OR CHARTER SHIPS THAT ARE ALREADY BUILT AND ADAPT THEM FOR USE RESPONSIVE TO OUR STRATEGIC SEALIFT REQUIREMENTS. THE ACQUISITION AND CONVERSION OF EIGHT SL-7 CONTAINER SHIPS IS AN EXAMPLE OF THE UNIQUE OPPORTUNITIES WE ARE EXPLOITING.

THIS METHOD OF ACQUIRING OR CHARTERING EXISTING VESSELS AND ADAPTING TO MILITARY NEEDS PROVIDES A SIGNIFICANT COST ADVANTAGE TO THE TAXPAYER AS WELL AS MUCH EARLIER AVAILABILITY WHEN COMPARED TO A NEW CONSTRUCTION PROGRAM.

ANOTHER CRITICAL ELEMENT OF OUR PROPOSED FORCE EXPANSION IS THE AVIATION THAT SUPPORTS IT. BOTH ADMIRAL HAYWARD AND VICE ADMIRAL TROST HAVE WELL PRESENTED THE CONTINUING IMPORTANCE OF AIR POWER AND, IN PARTICULAR, REGIONAL CONTROL OF THE AIR AS A VITAL ADJUNCT TO MARITIME SUPERIORITY. OUR FIVE-YEAR APN PLAN IS 75% LARGER THAN THE ONE SUBMITTED A YEAR AGO. IT PROVIDES PROCUREMENT FOR 1900 AIRCRAFT THAT NOT ONLY ACCOMMODATE MODERNIZATION AND REPLACEMENT, BUT FOR THE FIRST TIME IN MANY YEARS -- GROWTH. WE EXPECT TO "STAND UP" THE THIRTEENTH CARRIER WING IN FY84 FOLLOWED BY A FOURTEENTH IN FY87.

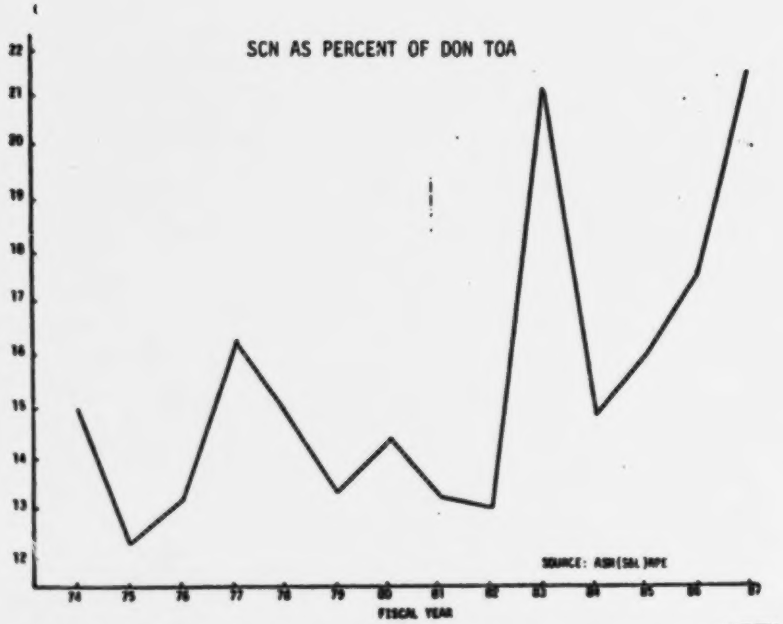
AFFORDABILITY

IT IS MY FIRM CONVICTION THAT OUR GREAT NATION CAN AFFORD THE INCREASES REQUESTED IN THE FY83 BUDGET. THIS ADMINISTRATION'S PROMISE TO "RE-ARM" AMERICA DOES NO MORE THAN RETURN THIS NATION TO A LEVEL OF DEFENSE EXPENDITURE APPROXIMATING THOSE OF THE 1960's. AS SHOWN IN FIGURE 6, THE REQUESTED LEVELS OF SPENDING TO REBUILD OUR NAVAL FORCES, IN PARTICULAR, MEASURED IN TERMS OF THE NAVY BUDGET AS A PERCENT OF THE GNP, WILL NOT REACH THE LEVELS THAT OUR NATION DEMONSTRATED AS AFFORDABLE IN THE 50s AND 60s -- AN ERA WHEN THE INTERNATIONAL SITUATION WAS LESS TENSE, OUR RELATIVE POSITION IN THE WORLD WAS FAR MORE SECURE, AND THE GREAT ARMADA OF SHIPS THAT WE HAD AMASSED IN WORLD WAR II WAS STILL RELATIVELY YOUNG.



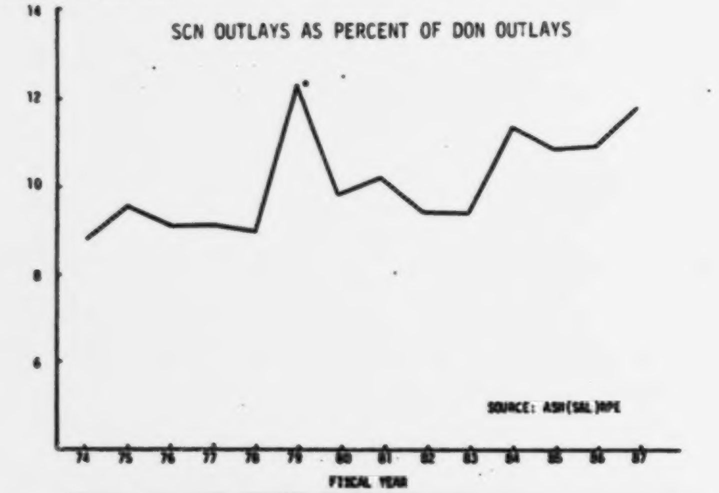
NAVY TOA AS A % OF GNP

THESE TRENDS, AS WELL AS THE PAST NEGLECT OF INVESTMENT REQUIREMENTS, HAVE HELPED SIZE OUR REQUEST. AS MENTIONED PREVIOUSLY, MUCH OF THE NAVY INCREASE IS IN INVESTMENT -- SHIPBUILDING AND CONVERSION.



SOURCE: ASN(S&L)RPE

THIS FIGURE DEPICTS THE PERCENT OF THE NAVY TOA BUDGET DIRECTED TOWARD SHIPBUILDING AND CONVERSION. THIS IS A SOMEWHAT MISLEADING CRITERION FOR RESOURCE ALLOCATION IN ANY GIVEN YEAR.. CURRENTLY, THE "BUDGET" MUST ACCOMMODATE ALL FUTURE YEAR COMMITMENTS, WHEREAS OUR OUTLAYS WILL NOT PRODUCE SUCH A DRAMATIC SURGE. THE NEXT FIGURE PRESENTS OUR SHIPBUILDING PROGRAM AS A FUNCTION OF OUTLAYS.

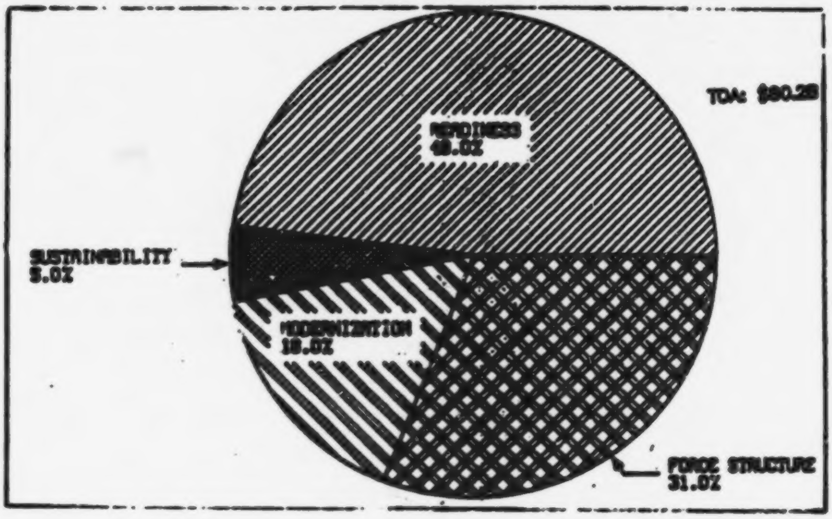


SOURCE: ASN(S&L)RPE

*CONTAINS LARGE AMOUNTS ASSOCIATED WITH IRANIAN TRUST FUND PAYMENTS AND CLAIMS SETTLEMENTS

SOME CONCERN HAS BEEN EXPRESSED THAT WE MAY BE MORTGAGING OUR FUTURE AT THE EXPENSE OF THE PRESENT -- PARTICULARLY IN READINESS AND SUSTAINABILITY. THIS FIGURE DISPLAYS ALLOCATION OF NAVY RESOURCES IN TERMS OF THE DOD "PILLARS": 1) FORCE STRUCTURE, 2) FORCE MODERNIZATION, 3) FORCE SUSTAINABILITY, AND 4) FORCE READINESS.

FY 83 MILITARY CAPABILITY COSTS
DON TOTAL OBLIGATIONAL AUTHORITY (TOA)



WE WILL ALLOCATE GREATER THAN 50% OF OUR FY83 BUDGET TO READINESS AND SUSTAINABILITY FOR OUR EXISTING FORCES AS WE REBUILD THE FLEET. DURING THE NEXT FEW MONTHS, AS WE REVIEW OUR FIVE-YEAR PROGRAM, CONTINUED ATTENTION WILL BE FOCUSED TO INSURE A BALANCED ALLOCATION BETWEEN INVESTMENT AND THE FUNDING FOR OWNERSHIP.

IN SUMMARY, WE BELIEVE OUR APPROACH TO EXPANSION IS BOTH AFFORDABLE AND ACHIEVABLE. WE ARE PROGRAMMING TO MEET REQUIREMENTS; THE INDUSTRIAL CAPABILITY EXISTS; AND WE INTEND TO MANAGE THE RESOURCES PROVIDED TO GAIN THE GREATEST RETURN ON THE TAXPAYERS' INVESTMENT.

BUSINESS MANAGEMENT

INTENSIVE MANAGEMENT ON OUR PART WILL BE REQUIRED IN ORDER TO PROPERLY EXECUTE THIS PLAN. WE ARE CONCERNED ABOUT COST GROWTH AND ARE INITIATING AGGRESSIVE PROGRAMS TO INSURE THAT THE TAXPAYERS' DOLLAR IS SPENT WISELY. AS AN EXAMPLE, WE HAVE A HEAD START ON IMPROVING MANAGERIAL EFFICIENCY. PRESIDENT REAGAN'S AMENDED BUDGET FOR FY 82 PLACED SPECIAL EMPHASIS ON ECONOMIES AND EFFICIENCIES IN DOD, EMPHASIZING SAVINGS TO OFFSET THE OVERALL INCREASED DEFENSE BUDGET. THE FY 83 BUDGET MAINTAINS THAT SPIRIT WITH SPECIFIC PROGRAMS IDENTIFIED. THE RESULTANT ECONOMIES, EFFICIENCIES, AND DOLLAR SAVINGS FOR THE DEPARTMENT OF THE NAVY ARE ESTIMATED TO BE GREATER THAN $9B OVER THE FY81-87 PERIOD. THE FIGURE BELOW HIGHLIGHTS CERTAIN OF THESE INITIATIVES RELATING TO ACQUISITION.

EFFICIENCIES--ECONOMIES PRODUCTION RATES AND MULTI-YEAR PROCUREMENT INITIATIVES

ECONOMIC PRODUCTION RATES

PROGRAM	FY83 TOA INCREASE	5-YEAR SAVINGS*
AIRCRAFT		
A-6E	109.6	58.4
EA-6B	169.6	36.8
F-14	562.5	70.9
CH-53E	81.8	20.9
SH-60B	55.7	217.5
COMMON ECM EQUIPMENT	61.7	18.5
OTHER	2.8	5.3
TOTAL	1,043.7	428.3

MULTI-YEAR PROCUREMENT

PROGRAM	FY83 TOA INCREASE	5-YEAR SAVINGS*
AIRCRAFT		
C-2	32.4	58.4
EA-6B	9.1	21.1
A-6E	5.0	20.3
CH-53E	29.9	35.0
WEAPONS		
SM-1 MISSILES	48.1	62.7
NATO SEASPARROW MISSILES	9.0	37.2
MULE LASER DESIGNATORS	10.5	5.5
MK-46 TORPEDOES	34.5	40.4
SHIPS		
T-AO FLEET OILERS	109.8	66.5
TOTAL	288.3	347.1

*AMOUNT REPRESENTS SAVINGS ABOVE AND BEYOND RECOVERY OF THE FY83 INVESTMENT AMOUNT.

SOURCE: OP92

THE CVN MULTI-SHIP ACQUISITION IS ANOTHER CASE OF THIS IMPORTANT COST-SAVING STRATEGY. BASED UPON A FULLY-FUNDED TWO-SHIP PROCUREMENT, WE WILL REALIZE THE MOST ECONOMIC, EFFICIENT, RAPID MEANS FOR OBTAINING TWO NEW CVN ASSETS. APPROXIMATELY $750M IN SAVINGS WILL ACCRUE FROM:

- o REDUCED ESCALATION FROM EARLIER DELIVERY
- o ECONOMIC ORDER QUANTITY PROCUREMENT
- o REDUCTION OF DUPLICATION IN START-UP, SET-UP, AND OTHER NON-RECURRING COSTS
- o IMPROVED PRODUCTION UTILIZATION, MANPOWER LEVELLING, AND LABOR PRODUCTIVITY

AS A FORMER BUSINESSMAN WHO HAS SPENT 20 YEARS IN ENGINEERING AND CONSTRUCTION ACTIVITY, I CAN APPRECIATE THE UNDERLYING LOGIC AND POTENTIAL PAY OFF OF THE ACQUISITION INITIATIVES PROCLAIMED BY THIS ADMINISTRATION. TWO OF THESE INITIATIVES CAN APPLY AS WELL IN SHIPBUILDING AS IN ANY OTHER ACQUISITION AREA - NAMELY, MULTI-YEAR PROCUREMENT AND COMPETITION. NEVERTHELESS, TO BE TRULY EFFECTIVE, BOTH OF THESE "INITIATIVES" REQUIRE THE ESSENTIAL INGREDIENT OF PROGRAM STABILITY. MANY OF OUR SPECIFIC SHIP ACQUISITION STRATEGIES ARE NOW ROOTED IN THE EXPECTATION THAT OUR FIVE YEAR SHIPBUILDING PROGRAM WILL REMAIN REASONABLY STABLE. THIS COMMITTEE IN PARTICULAR IS WELL FAMILIAR WITH THE PRACTICES OF THE PAST, WHICH CAN BE SUMMARIZED BY THE PHRASE, "BUDGET FOR THE NEXT YEAR AND WISH FOR THE OUTYEAR:" YET, WE RECOGNIZE INTUITIVELY THAT A SUCCESSION OF ONE-YEAR PLANS CANNOT EXECUTE EFFICIENTLY MAJOR PROGRAMS WHOSE TIME CONSTRAINTS, FROM INCEPTION TO DELIVERY, RANGE AT BEST FROM 4 TO 6 YEARS. MULTI-YEAR PROCUREMENT CAN AND WILL WORK. HOWEVER, TOGETHER WE MUST HAVE CONVICTION AND AGREEMENT ON WHAT WE WANT TO BUY OVER A PERIOD OF TIME MEASURED IN YEARS, ALONG WITH THE COURAGE TO COMMIT TO THE BEST PROCUREMENT PLAN POSSIBLE. SIMILARLY, THE ADDED UP-FRONT COSTS, INCURRED BY INTRODUCING

COMPETITION IN A MAJOR ACQUISITION PROGRAM, CAN BE PAID BACK IN OUT-YEAR SAVINGS ONLY IF WE ARE REASONABLY CERTAIN OF BOTH THE QUANTITY AND RATE OF PRODUCTION IN THOSE OUTYEARS.

AS A CONSEQUENCE, OUR CVN MULTI-YEAR PROCUREMENT AND OUR CG-47 SECOND SOURCE INITIATIVES ARE BOTH ROOTED IN A COMMON OBJECTIVE: NAMELY, TO BEST MOBILIZE AND MOTIVATE OUR INDUSTRIAL BASE. WE WANT TO BUILD THESE TWO HIGHLY COMPLEX AND ESSENTIAL CLASSES OF SHIPS AS EFFICIENTLY AS POSSIBLE AS REFLECTED IN OUR FIVE-YEAR FORCE BUILDING PLAN.

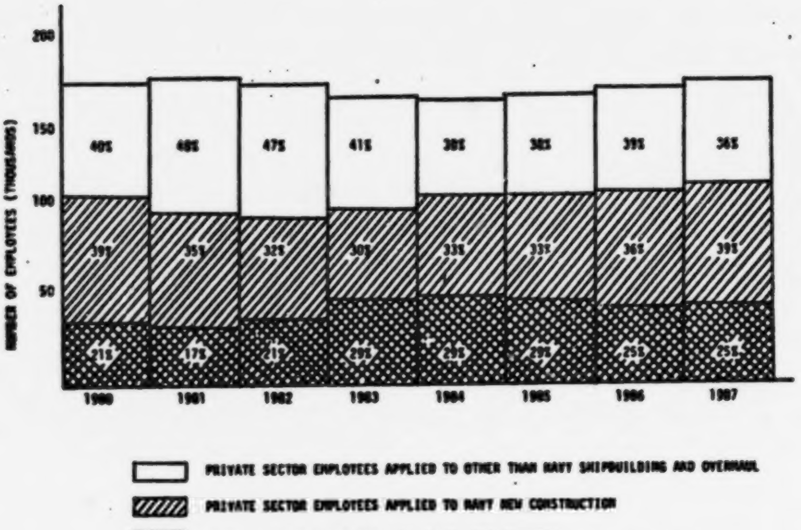
OUR CURRENT SHIP ACQUISITION STRATEGIES AND BUSINESS CONTRACT POLICIES ARE REALISTIC. THEY HAVE BEEN TAILORED EXPLICITLY TO:

- THE QUALITY AND RATE DESIRED
- THE ENGINEERING COMPLEXITY AND TYPE OF SERVICE INTENDED
- THE CONSTRUCTION LEAD TIME AND DIFFICULTY INVOLVED
- THE INCREASING TECHNICAL SOPHISTICATION AND IMPROVING CONSTRUCTION CAPABILITIES OF OUR SHIPBUILDERS
- THE CURRENT AND FUTURE PRODUCTION CAPACITY OF OUR INDUSTRIAL BASE
- THE REALISTIC EXTENT OF COMPETITION WHICH CAN BE ACHIEVED
- OUR OWN IN-HOUSE ENGINEERING AND MANAGEMENT CAPABILITIES

THUS, WE HAVE MOVED AWAY FROM SIMPLISTIC, INFLEXIBLE PROCEDURES AND TOWARD MORE FLEXIBLE, EQUITABLE CONTRACT POLICIES. THESE POLICIES ARE INTENDED TO SHARE THE RISK BETWEEN OUR CONTRACTORS AND OURSELVES AS FAIRLY AS POSSIBLE, BASED ON A THOROUGH AND OBJECTIVE EVALUATION OF THE ENGINEERING/CONSTRUCTION REALITIES INVOLVED.

MUCH HAS BEEN SAID (AND, IN MY OPINION, MUCH OF IT ERRONEOUS) ABOUT THE ABILITY OF OUR NATIONAL INDUSTRIAL BASE TO RESPOND TO THE CHALLENGE IMPLICIT IN BUILDING A 600 SHIP NAVY. ALTHOUGH THERE HAVE BEEN AND WILL CONTINUE TO BE SPECIFIC PINCH POINTS OR PROBLEM AREAS IN OUR PROGRAM -- PRIMARILY RELATING TO HIGHLY SPECIALIZED VENDOR SUPPLIED ITEMS AND CRITICAL SOURCE MATERIALS -- OUR PRIMARY SHIPBUILDING BASE IS MORE THAN ADEQUATE TO ADDRESS OUR NEEDS.

PRIVATE SECTOR SHIPBUILDING AND OVERHAUL PERSONNEL



SOURCE: NAVSEA 90
ASN(SAL)MPE

THIS FIGURE SHOWS THAT PLANNED NAVAL NEW CONSTRUCTION AND OVERHAULS WILL ACCOUNT FOR BETWEEN 60% TO TWO-THIRDS OF THE TOTAL PRIVATE SECTOR CAPACITY OVER THE NEXT FIVE YEARS. ADMITTEDLY, THIS IS A LARGE CONTRIBUTION, BUT IT IS ENTIRELY FEASIBLE. INDEED, IF THE COMMERCIAL SHIPBUILDING MARKET DOES NOT MAKE A DRAMATIC RECOVERY SOON, NAVY WORK ALONE WILL NOT SUPPORT THE CURRENT SHIPBUILDING AND SHIP REPAIR CAPACITY AVAILABLE IN THE UNITED STATES. THIS WOULD BE MOST UNFORTUNATE FOR TWO REASONS -- FIRST, WE WILL LOSE DESIRABLE MOBILIZATION OR "SURGE" CAPACITY: AND SECONDLY, SHIPBUILDING IS A VERY LABOR INTENSIVE INDUSTRY WITH A HIGHLY LEVERAGED, MULTIPLIER EFFECT ON PRODUCTIVE ECONOMIC ACTIVITY.

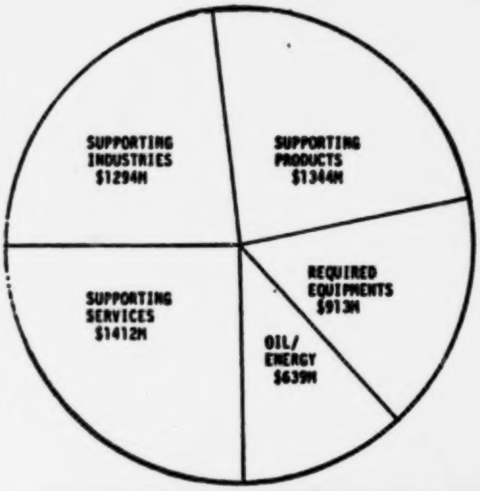
THE MULTIPLIER EFFECT CAN BE SHOWN BY THE BELOW FIGURE.

FOR EACH DOLLAR THAT GOES INTO THE SHIPBUILDING INDUSTRY, AN ADDITIONAL DOLLAR IS GENERATED THROUGHOUT THE PRIVATE SECTORS AS SHOWN IN THIS FIGURE.

1983 ECONOMIC IMPACT OF SHIPBUILDING INDUSTRY

(FY-80 $)

IN FY 1983, THE SCN AND O&M,N (SHIPBUILDING) INVESTMENT IS PROJECTED AT $5,491M. WITH INDUSTRIAL MULTIPLIERS APPLIED, THIS INVESTMENT GENERATES $5,602M, DISTRIBUTED THROUGHOUT PRIVATE SECTORS AS SHOWN BELOW:



SUPPORTING INDUSTRIES:
- MINING, STEEL MILLS, FOUNDRIES,...

SUPPORTING PRODUCTS:
- FABRICATED METALS/ALLOYS, PIPES & VALVES, SEMI-CONDUCTORS, ...

REQUIRED EQUIPMENTS:
- ENGINES, MOTORS, FANS, PUMPS,...

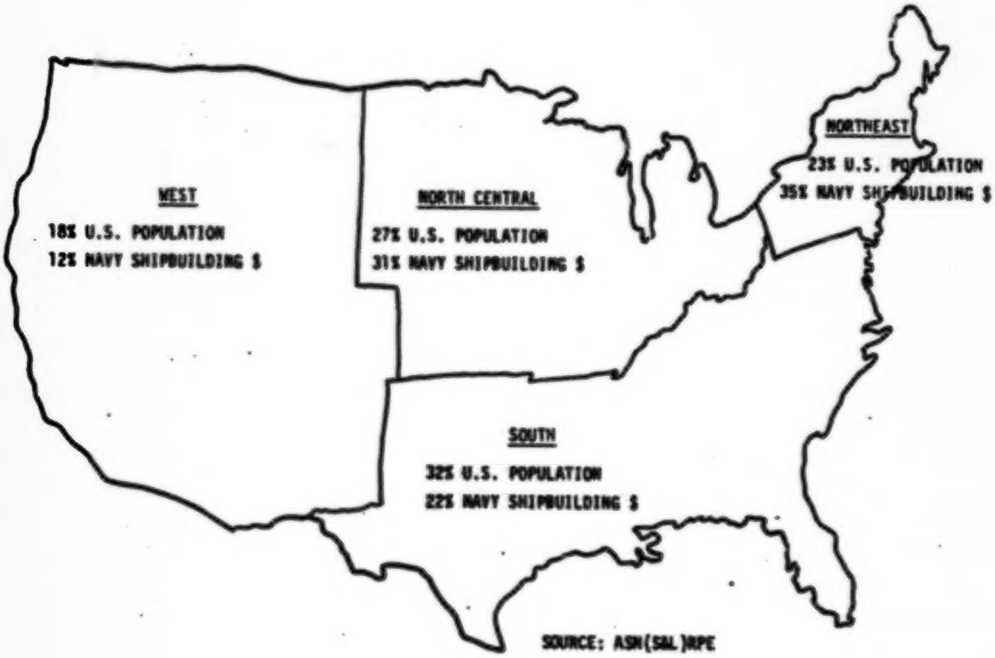
OIL/ENERGY:
- PETROLEUM, NATURAL GAS, ELECTRICITY,...

SUPPORTING SERVICES:
- FREIGHT, TRANSPORTATION, COMMUNICATION, LOCAL BUSINESSES,...

SOURCE: DEFENSE ECONOMIC IMPACT MODELING SYSTEM ASN(S&L)RPE

FURTHER, THIS INHERENT MULTIPLIER EFFECT OF OUR SHIPBUILDING BECOMES RATHER WELL DISTRIBUTED GEOGRAPHICALLY. USING EXPECTED REGIONAL DISTRIBUTION OF PROCUREMENTS RELATING TO NEW AIRCRAFT CARRIER CONSTRUCTION AS AN EXAMPLE, WE CAN SEE THAT THE TAXPAYERS' SHIP CONSTRUCTION DOLLARS RECEIVE A FAIRLY EVEN DISTRIBUTION AS A FUNCTION OF POPULATION, WITH ENHANCED SHARES GOING TO THE NORTHEAST AND NORTH CENTRAL REGIONS.

REGIONAL DISTRIBUTION OF U.S. NAVY SHIPBUILDING OUTLAYS (NEW CARRIERS) AND U.S. POPULATION


WEST
18% U.S. POPULATION
12% NAVY SHIPBUILDING $
NORTH CENTRAL
27% U.S. POPULATION
31% NAVY SHIPBUILDING $
NORTHEAST
23% U.S. POPULATION
35% NAVY SHIPBUILDING $
SOUTH
32% U.S. POPULATION
22% NAVY SHIPBUILDING $

SOURCE: ASN(S&L)RPE

THE TABLE BELOW SUMMARIZES THE MAJOR U. S. SHIPYARDS INVOLVED IN U. S. NAVY AND DEEP DRAFT SHIP CONSTRUCTION.

. MAJOR U.S. SHIPBULDING YARDS

DECEMBER 1980

	Total Plant Employees	Total Production Workers	Building Category		
			I	II	III
Total-Active Shipbuilding Base	119,109	98,000			
Atlantic Coast	66,501	55,687			
Bath Iron Works	5,584	4,969	x		
General Dynamics, Quincy	3,740	2,294	x		
General Dynamics, Groton	24,738	21,365	x		
Bethlehem Steel, Sparrows Pt.	2,720	1,523		x	
Maryland Shipbldg & Drydock	1,806	1,168		x	
Newport News Shipbldg & Drydock	24,208	18,713	x		
Norfolk Shipbldg & Drydock	3,705	2,513			x
Gulf Coast	28,635	22,819			
Tampa Ship Repair & Drydock	700	406			x
Alabama Drydock & Shipbldg	1,249	945			x
Litton/Ingalls, Pascagoula	11,926	9,638	x		
Avondale Shipyards	7,723	6,124	x		
Halter Marine Services	2,507	2,074		x	
Equitable Shipyards	1,110	800			x
Levingston Shipbldg, Orange	2,237	1,812			x
Todd Shipyards, Houston	489	441			x
Todd Shipyards, Galveston	694	579			x
Pacific Coast	19,681	15,864			
National Steel & Shipbldg	7,528	5,837		x	
Todd Shipyards, San Pedro	3,789	3,228	x		
Bethlehem Steel, San Francisco	580	328			x
Tacoma Boatbuilding Company	2,057	1,533		x	
Todd Shipyards, Seattle	4,167	3,607	x		
Lockheed Shipbuilding, Seattle	1,560	1,331	x		
Great Lakes	4,292	3,630			
American Ship Building, Lorain	1,096	896			x
Peterson Builders, Inc.	974	884			x
Bay Shipbuilding, Sturgeon	1,358	1,111			x
Marinette Marine Corp.	864	739		x	

CATEGORY:
I - Combatant Capable (plus Amphibious/Auxiliary and Merchant)
II - Amphibious/Auxiliary - Capable (Plus Merchant)
III - Merchant - Capable (Only)

Source: MARAD/IDA

PRIVATE SHIPYARD INVESTMENT

THE ENTIRE BURDEN AND RISK OF THE ADMINISTRATION'S FIVE-YEAR SHIPBUILDING PROGRAM IS NOT RESTING SOLELY ON THE PUBLIC SECTOR. PRIVATE VENTURE CAPITAL IS RESPONDING TO THE INTENT AND THE RESOLVE OF THIS ADMINISTRATION TO PROVIDE FOR THE LONG OVERDUE RE-BUILDING OF THE FLEET. PRIVATE INVESTMENT IN THE NATION'S SHIPYARDS IS INTENDED TO IMPROVE PRODUCTIVITY AND ENHANCE CAPACITY TO ENSURE THAT THE SHIPBUILDING INDUSTRIAL BASE CAN SUPPORT THE FIVE-YEAR PROGRAM ON TIME AND WITHIN COST.

THE NAVY IS WORKING WITH THE PRIVATE SHIPBUILDING FIRMS TO IDENTIFY PROJECTS THAT WILL ENHANCE THEIR PRODUCTIVITY. THE FOLLOWING ARE EXAMPLES OF PRIVATELY FUNDED CAPITAL INVESTMENT PROJECTS:

- A MAJOR WATERFRONT UPGRADING PLAN INITIATED TO INCLUDE A SYNCHROLIFT DRYDOCK AT TODD PACIFIC SHIPYARDS, SAN PEDRO, CA.
- UPGRADING/MODERNIZATION OF EXISTING DRYDOCK AT NEWPORT NEWS SHIPBUILDING AND DRYDOCK CO., NEWPORT NEWS, VA.
- AN AUTOMATED PIPE SHOP AT AVONDALE SHIPYARDS, NEW ORLEANS, LA.
- A NEW FACILITY UTILIZING A 81,000-TON FLOATING DRYDOCK AT BATH IRON WORKS IN PORTLAND, ME.
- A 1,000-FOOT LONG, DEEP DRAFT PIER; 150-TON GANTRY CRANE; AND A 40,000-TON DRYDOCK AT TODD PACIFIC SHIPYARDS, SEATTLE, WA.
- REBUILDING OF SLIPWAYS AND CRANEWAYS AT LOCKHEED SHIPBUILDING, SEATTLE, WA.
- TECHNOLOGY UPGRADES AT PETERSON SHIPBUILDERS, STURGEON BAY, WI.
- NEW LATHE AND BORING EQUIPMENT AT NORTHWEST MARINE, PORTLAND, OR.

SMALL BUSINESS CONSIDERATIONS

U. S. SHIPBUILDING IS A HIGHLY CONCENTRATED INDUSTRY. LESS THAN 5% OF THE TOTAL PRIVATE SHIPBUILDING/REPAIR COMPANIES IN THE UNITED STATES EMPLOY OVER 1000 PRODUCTION WORKERS. YET, THIS 5% OF THE INDUSTRY EMPLOYS OVER 2/3 OF THE TOTAL PRIVATE SHIPYARD WORK FORCE AND ACCOUNTS FOR OVER 2/3 OF THE TOTAL INDUSTRY BUSINESS. NEVERTHELESS, FOR OVER 20 YEARS THE NAVY HAS HAD AN ACTIVE SMALL BUSINESS PROGRAM, AND WE HAVE AGGRESSIVELY PURSUED THIS PROGRAM IN RESPONSE TO THE INTENT OF THE CONGRESS AND THE ADMINISTRATION.

LAST YEAR (FY 1981), FOR EXAMPLE, THE NAVY EXCEEDED ITS SMALL BUSINESS AND SMALL DISADVANTAGED BUSINESS GOALS BY A SIGNIFICANT MARGIN; OVER $4.1 BILLION IN GOODS AND SERVICES WERE PROCURED THROUGH SMALL BUSINESS ENTERPRISES. ADMIRAL FOWLER'S NAVAL SEA SYSTEMS COMMAND, IN PARTICULAR, ACHIEVED 110% OF ITS SMALL BUSINESS PROCUREMENT GOALS, AND IN THE AREA OF SMALL BUSINESS SET ASIDE SHIP PROCUREMENT, THE COMMAND EXCEEDED ITS GOAL BY OVER 50%. THAT IS NOT TO SAY THAT EVERYTHING IN THE SMALL BUSINESS AREA IS PROCEEDING WITHOUT DIFFICULTY, BUT WE ARE GETTING THE JOB DONE, OBTAINING FAIR VALUE FOR THE TAXPAYERS' DOLLAR, AND MEETING THE OBJECTIVES SET FORTH.

CONCLUSION

I FIRMLY BELIEVE THAT WE HAVE SET FORTH A PROPER AND BALANCED NAVAL SHIP CONSTRUCTION AND GENERAL PROCUREMENT PROGRAM RESPONSIVE TO OUR NATIONAL STRATEGY. MOREOVER, THIS PROGRAM -- ALTHOUGH AMBITIOUS -- IS TECHNICALLY AND INDUSTRIALLY FEASIBLE. WHEN REGARDED IN THE CONTEXT OF THE CURRENT THREAT AND THE PRECEDENT OF THE NATION'S HISTORIC, POST WWII RESOURCE ALLOCATION, I FIRMLY BELIEVE THE PROGRAM IS ALSO "AFFORDABLE."

IN TERMS OF SPECIFIC ACQUISITION AND CONTRACT PROCEDURES, WE HAVE EMBARKED ON THE RIGHT COURSE AS EVIDENCED BY THE GENERALLY GOOD TO EXCELLENT CURRENT PERFORMANCE OF OUR SHIPYARDS. I WISH TO ASSURE THIS COMMITTEE THAT WE IN THE NAVY INTEND TO MANAGE JUST AS FAIRLY, KNOWLEDGEABLY, AND RESPONSIBLY AS WE CAN THE PRECIOUS RESOURCES ALLOCATED TO REBUILDING OUR FLEET.

MR. CHAIRMAN, THIS CONCLUDES MY REMARKS. I AM PREPARED TO ADDRESS ANY QUESTIONS THAT THE COMMITTEE MAY HAVE.

Senator **Cohen**. Will you proceed, Mr. Paisley.

STATEMENT OF MELVYN R. PAISLEY, ASSISTANT SECRETARY OF THE NAVY (RESEARCH, ENGINEERING AND SYSTEMS) ACCOMPANIED BY VICE ADM. ROBERT R. MONROE, DIRECTOR, RESEARCH, DEVELOPMENT, TEST AND EVALUATION OF THE CHIEF OF NAVAL OPERATIONS; GERALD A. CANN, DEPUTY; AND BRIG. GEN. JACOB W. MOORE, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND STUDIES, U.S. MARINE CORPS

Mr. **Paisley**. Mr. Chairman and Senator Byrd, I have a prepared statement. I would like permission to submit this for the record.

Senator **Cohen**. It will be admitted, as will all of the prepared statements.

Mr. **Paisley**. Much has already been said and I will try to just give you a couple of brief remarks and get to the question period.

I have started out in my new position by going around and looking very carefully at the Navy labs. I think they represent the technical capability that is needed to properly assess the technical risk associated with the Department of the Navy's R. & D. programs.

I might say that I have been to all of the labs and I have a strong feeling about their capability and in fact I would say that probably the Navy labs as a whole represent the kind of finest labs in the country today.

We have been working hard on developing joint programs with the other services and the programs that I have reviewed so far in my short term in office I think we have put together some good joint programs.

I mentioned the VSTOL program that will be coming forward which is a joint program. I believe the R. & D. programs that we have laid out support the short-term and long-term requirement for maritime superiority 59 percent of our entire R. & D. budget is in tactical warfare and 74 percent of that is in naval warfare.

I might say that in closing, before we enter into the question period, in regard to your opening comment in our handling of the GP, I will work hard in trying to cover what is a problem area and how we handled that. I might say I think that some of that was caused by my real lack of experience in understanding really what might be called the laws of Congress, or the protocols of Congress and I think I allowed something to happen.

Senator **Cohen**. I don't even understand the protocols of Congress.

Mr. **Paisley**. I did allow something to happen, and I agree that the decision that was made was the right decision but maybe we could have handled it a little better. Like I say, when I go over to the House I will attempt to try to lay all of the facts on the table to show that it was a good decision. We probably should have done that in advance. That was the mistake we made. With that I will turn this over to General Moore.

[The prepared statement of Mr. Melvyn R. Paisley, Assistant Secretary of the Navy, (Research, Engineering, and Systems) follows:]

PREPARED STATEMENT OF MELVYN R. PAISLEY, ASSISTANT SECRETARY OF THE NAVY (RESEARCH, ENGINEERING AND SYSTEMS)—PROGRAM OVERVIEW

A. INTRODUCTION

Mr. Chairman and members of the committee, it is an honor and a pleasure to appear before you for the first time to present the Department of the Navy fiscal year 1983 Research, Development, Test and Evaluation Program and Budget. I believe this program is a good balance between correcting our near-term deficiencies through system development and providing for our long-term requirements through a strong technology program.

At the table with me today are Vice Admiral Robert R. Monroe, Director, Research, Development, Test and Evaluation for the Chief of Naval Operations, Mr. Gerald A. Cann my Principal Deputy, and Brigadier General Jacob W. Moore, Deputy Chief of Staff for Research, Development, and Studies, U.S. Marine Corps, all of whom are known to the Committee.

In my presentation today, I intend to fulfill the commitment I made to the Congress in my confirmation hearing to be forthright in my dealings with the committees. I will begin my testimony with a discussion of our Research and Development Policy and Strategy. I will then address our major Research and Development objectives followed by a brief overview of Research and Development issues. With your permission, Mr. Chairman, I will provide for the record a statement which also describes in some detail programs of interest to the Congress.

B. RESEARCH AND DEVELOPMENT POLICY AND STRATEGY

Management Philosophy.—My intent is to manage Research and Development programs using an open and participatory style. My organization and its interfaces are being restructured to provide for controlled decentralization and a team effort when Research and Development technical and business decisions are made.

My Research and Development responsibilities include the technical base, and I have carefully reviewed and tailored the interfaces with the technical base community including those concerning the Department of the Navy Research and Development Laboratories. I have personnally visited each of the laboratories, and I might add, was pleased with the capability that exists at these laboratories. When a program milestone decision is required, I plan to request the appropriate laboratory to provide their technical assessment of the program. This will also serve to close the management loop with this part of the system acquisition team.

Recently, I reconstituted the Navy Research Advisory Committee so it will have a balanced involvement between Industry and Academia. They are being directed to look at near-term issues and will report to me concerning new technology, system acquisition improvements, and readiness. These actions will provide my Office with an independent technical and management input concerning the technical base and major Department of the Navy system developments.

Last year, Secretary Lehman reorganized the Secretariat to focus on the objectives he has defined for the Department of the Navy. The Office of the Assistant Secretary of the Navy (Shipbuilding and Logistics) was formed to be responsible for all aspects of ship design and procurement. I continue to be responsible for the RDT&E appropriation. The Assistant Secretary of the Navy (Shipbuilding and Logistics) and I are jointly reviewing programs at their production decision, and we are both focusing on the system acquisition strategy to bring our expertise to bear on the business side of programs. I am closely working with the other Assistant Secretaries to integrate our management functions and responsibilities into a close knit team for Research and Development System Management decisions. This team is also making decisions to delegate responsibility and authority in order to improve organization efficiencies and reduce layering. Within my own Staff, I have restructured to focus on air, submarine/anti-submarine warfare, surface and strategic issues. The new emphasis in the Secretary of Navy's Office on strategic issues is particularly pertinent since the program plan and acquisition strategy for the D-5 missile is currently being structured to develop the required system in the shortest time for the lowest costs.

All of the above actions are analogous to the President's theme of "getting the government off the back of the people," as I plan to develop a system acquisition management process and organization structure that will get the system off the backs of the program managers, scientists, and engineers of our in-house and industrial teams.

Relationship to the 600-Ship Navy.—Secretary Lehman, in his testimony to you this year, has described the plans and actions to meet the objectives of a 600-ship

Navy based on 15 battle groups. The Chief of Naval Operations has testified to you this year that there are two clearly discernable trends in the Navy at this time. First, we are a Navy on the move and have momentum to keep it in the right direction; and, we have an administration that is determined to build toward maritime superiority in this decade. I was very encouraged by the strong Congressional support for maritime superiority which was provided by Congressional Amendment Section 782 of the fiscal year 1982 Defense Appropriations Act. The fiscal year 1983 Research and Development program is tailored to meet the near- and far-term objectives of the strategy of maritime superiority. I will not dwell on the plans to build the additional platforms, but would like to briefly describe the Research and Development plans to enhance and modernize the on-board equipment and weapon systems to provide increased offensive and defensive fire power.

In the near term, the deployment of Tomahawk cruise missiles on surface ships and submarines is the fastest and most cost-effective way to deploy additional and distributed strike capability throughout our Naval forces. Tomahawk is now beginning production, and Vertical Launch System developments are proceeding on schedule, with recent successful missile firing tests. In light of the need to modernize in the near term, our Research and Development decisions are concentrating on simplifying and shortening the development cycle. Recent Milestone II decisions concerning Advanced Self-Protection Jammer, Extremely High Frequency Satellite Communications System, and Joint Tactical Information Distribution System are addressing these objectives.

In the long term, the fiscal year 1983 Research and Development program will modernize the anti-air warfare system of several of our Battle Group-capable surface combatants and continue development of the DDG–51 to enhance and complement the battle group capability to be provided by the CG–47. We are just completing the modernization of the surface ship anti-submarine warfare combat system through the Anti-Submarine Warfare Combat System Integration, SQR–19 Towed Array Sonar, the Light Airborne Multi-Purpose System (LAMPS) III, and SQS–53B systems.

A major update of the attack submarine system was begun last year in the Submarine Advanced Combat System. On the air side, both the F/A–18 and AV–8B are finishing development, and key aircraft missile systems are completing modernization. Our fiscal year 1983 Research and Development program has critical weapon developments for each of the platforms to meet the needs being generated by real threat improvements. We are seeking to optimize the employment of smart weapons which can maintain a technological edge over the threat. Our design effort is being focused to provide smart weapons with high accuracy and kill probability in preference to a heavy investment in platforms which go faster, higher, and farther.

The decisions made concerning the Research and Development programs to support the Secretary of the Navy's strategy have required a significant change in our Research and Development policy. We are intent on stabilizing and properly structuring the programs to meet the critical modernization just discussed. Over the past six months, about 40 programs were cancelled to counter the tendency to spread dollars over too many programs. We have also focused on the performance and readiness thresholds required so programs deliver the baseline system without requirement creep and the costly attempt to meet gold-plated goals. We have stopped chasing rainbows; and each of the four major programs that I have reviewed since being confirmed was not approved for the next milestone until this policy was achieved. In addition, we are structuring joint programs whenever the requirements and timing are common. Joint efforts have been very successful for the Advanced Self-Protection Jammer, Extremely High Frequency Satellite Communication Systems, and the Joint Tactical Information Distribution System which were recently reviewed and approved for Full-Scale Development. To meet the needs of the Marine Corps, we have structured joint programs for the Light Armored Vehicle and Mobile Protected Gun System, and we are structuring a joint program for Marine Medium Assault Transport (HXM).

The above changes in Research and Development policy could lead us to be overly cautious in advancing the technological frontier. Our objective and plan is to use sound system engineering management and strike a balance between low-risk and advanced technological developments. We will not become overly cautious.

In addition, we are now more carefully emphasizing readiness and Reliability, Maintainability, and Availability requirements in the design. When we achieve our modernization objectives, our systems must provide the 600-ship force with improved readiness and logistic support for our force with improved readiness and logistic support for our forces to achieve the overall system effectiveness. This attention was given to the Landing Craft Air Cushion and F/A–18 developments; and I believe the F/A-18 will provide the Fleet with a system which has high readiness and is easy to maintain on-line.

System Acquisition Views.—I have made several references to actions to shorten the acquisition cycle. Every official in the Department of Defense makes shortening the cycle a primary objective. The problem has been that it is a very complicated issue and a thorough understanding of the trouble spots has not been achieved. I would like to briefly discuss with you several of the areas in the process that I consider to be trouble spots and indicate steps we are taking to resolve them.

1. *Fuzzy Requirements.*—Our requirements have been allowed to grow during development especially between milestones, and this has increased the schedule and risk. Also, by using threshold and goals, we have increased costs and schedule to achieve the goal requirements when the threshold values would have been sufficient. This has stopped. The programs which have been recently reviewed will not change the requirements in the milestone phase approved. In addition, program requirements are only being defined as thresholds.

2. *Budget Decisions.*—Our System Acquisition and Budget processes were independent management systems for many good reasons. However, budget decisions were overturning milestone decisions without sufficient attention to program impact. This caused program stretchout and, frequently, reduction in the efforts planned for readiness, test and evaluation, and logistics. The results have been obvious. Recent Department of Defense policy changes are correlating the two processes better, and I am personally reviewing the budget decisions to assess the impact on program structure. The inverse of this is also true. Program Managers cannot make decisions to change a system without approval at the Secretarial level if the system change increases the funding profile in the Five-Year-Defense Plan.

3. *Transition to Production.*—The full-scale development and production phases were allowed to be decoupled causing gaps and poor technical transfer to production. This aspect of a program is being reviewed beginning at the first program milestone and at each milestone thereafter. We are approving the use of concurrency when common sense and/or the risk of the development warrants it such as the case for the Landing Craft Air Cushion. This will not only shorten the cycle, but will permit a more effective transfer of the design to production.

The above are examples of how trouble spots are being worked, and I am also utilizing new processes or adapting current processes to improve the acquisition strategy for systems. I will briefly describe three initiatives that I feel will have high payoff:

1. *Competition/Incentives.*—Of the current Selected Acquisition Report programs, 70 percent were competed. Competition was utilized at a point in the development that made the program's development cost effective. This will continue. However, the contractor frequently does not have an incentive/award-type contract which can motivate the contractor to create a design that balances cost, performance, and readiness for the purpose of achieving a quality system at low-unit cost. Both Secretary Sawyer and I have taken steps to establish this as a way of doing business. During the past year, such competition initiatives have been used for the Advanced Self-Protection Jammer and High Speed Anti-Radiation Missile programs. Also, the Tomahawk Cruise Missile has, or will have, competition managed by the Program Office for virtually every major subsystem.

2. *Pre-planned Product Improvement.*—Our weapon systems have been utilizing an effective form of pre-planned product improvement for many years by evolving, through engineering changes, to meet new threat changes and to use advanced technology. As used now, pre-planned product improvement will force more planning in the beginning of the program which will enable us to shorten the cycle and lower the costs of the development by utilizing a planned evolutionary process. Over 45 systems are currently candidates for pre-planned product improvement system acquisition strategy. But, virtually every system is conceptually a candidate, and I have taken steps to ensure that pre-planned product improvement concepts have been used on each of the four programs for which I have conducted a milestone review.

3. *Multi-Year Procurement.*—The legislation that you have provided on multi-year procurement will be used on stable programs to motivate the contractor to invest in the production line and its capacity. In addition to the C^2 aircraft, which was approved for fiscal year 1982 multi-year procurement, the Department of the Navy submitted 10 programs as candidates for fiscal year 1983 multi-year contracts. Multi-year procurement is, of course, procurement oriented, but it does couple with Research and Development through the initiatives concerning transition to production.

We have formally changed the Secretary of the Navy's policy on system acquisition in accordance with the Secretary of Defense's policy changes and the above Department of the Navy innovations. Equally important are the processes being developed to conduct milestone and program reviews with an equal focus on the performance and business issues. When I review the business aspects of acquisition strategy, I concentrate on the contractor risks; back-up for the subject program; innovation used in the business strategy; and use of incentives/awards to provide a design that achieves lowest unit costs.

C. MAJOR RESEARCH AND DEVELOPMENT OBJECTIVES

In order to accomplish the improvements I have just discussed, I have established four Research and Development objectives for my office:

1. *Reduction of Research, Development, Test and Evaluation Programs.*—I am dedicated to making the hard decisions required to focus our Research and Development dollars where they can do the most good. In preparation for this budget, we have cancelled programs and have had to resolve difficult acquisition issues such as for the Marine Medium assault Transport (HXM), Seafire, and Semi-Active, Laser-Guided Projectile.

2. *Improving Planning.*—Stable budgets and current program plans will be the requirement for our priority systems. Plans will be based on improved cost estimates; and costs will be included as an equal partner with performance and readiness in the design phase. I intend to utilize the Navy Research and Development Laboratories for technical assessment of the program when evaluating the plan.

3. *Reducing Acquisition Time.*—I will be working to improve the link between the Planning, Programming, and Budgeting System and the system acquisition processes. My focus will be on the new start approval and the "full" funding required to initiate properly a new design. We must be able to develop a new system like the D-5 in a timely and cost-efficient way so we can still afford the Research and Development required to provide the superior general purpose forces defined by the Secretary of the Navy's strategy.

4. *Technology Selection and Transition.*—Our Research and Development strategy must provide a proper balance between current modernization plans and the future. This objective will focus on: improved technology base review processes, including involvement of the staff of current engineering developments; better utilization of Fleet inputs and threat data to establish deficiencies; and coordination with academia (as I have started through the Navy Research Advisory Committee) and other Services. These objectives demonstrate our determination to remain on the cutting edge of progress in basic research and technology. Therefore, the health of our Department of the Navy Technology and Engineering Laboratories has one of our highest priorities in Research and Development. The Department of the Navy has some of the best such organizations in the entire world, and we are firmly committed to attracting and retaining the best and most creative talents in these organizations.

D. RESEARCH AND DEVELOPMENT PROGRAM ISSUES

The following chart breaks down our fiscal year 1982 Research, Development, Test and Evaluation Budget into the various Budget Activities. As can be seen, about 59 percent of our budget is devoted to Tactical Warfare programs, with 74 percent of that amount to Naval Warfare—the heart of our mission. These Research and Development programs directly support the strategy for the 600-ship Navy. I would like to highlight certain decisions, plans, and programs for you. I might add that my decisions are based on inputs from the Fleet. I have visited a carrier, a frigate, and an attack submarine and plan to participate in Fleet operations in the months ahead to continue to obtain a first-hand assessment of the Research and Development requirements.

Strategic.—The decision has been made to begin development of the D–5 missile. This system is essential to our strategic policy. In order to attain the D–5 missile in the most efficient and economic way, this program is being structured to include a substantial degree of concurrency, pre-planned product improvement, and early test and evaluation, all with the goal of improving the Initial Operational Capability by one to two years. The D–5 system will provide the opportunity to improve not only range or payload, but most importantly the accuracy previously available only in land-based Inter-Continental Ballistic Missile systems.

As part of the Navy's strategic system, we are developing command and control programs to provide a more rapid response and greater connectivity. These programs will result in more reliable, effective, and survivable systems. A new ECX aircraft for the TACAMO mission will provide greater range and continuous survivable communications and will replace the aging EC-130 system. The Extremely Low Frequency program, now under development at the Wisconsin Test Site, will provide a one-way, low-data-rate link to submarines. This system will further reduce submarine vulnerability to detection while the submarine is on patrol. Finally, a joint satellite program with the Air Force, MILSTAR, will provide extremely high frequency communication from command centers and submarines.

Anti-Submarine Warfare.—Measurable, qualitative improvements in the Soviet submarine threat, such as speed, depth, maneuverability, and operational quieting, as well as the continuing Soviet submarine building program, makes it essential that we pursue a vigorous Research and Development effort to retain our current advantage.

The Soviet's qualitative improvements make it necessary to continue our defense in depth approach. This is particularly true concerning our submarine detection sensors. For example, our requested budget contains funds to continue the development of surveillance systems which can be rapidly deployed (Rapidly Deployable Surveillance System) or used by mobile forces (Surveillance Towed Array System). Sensor improvement programs for surface ships, submarines, and aircraft are being stressed to offset potential quieting trends.

Steps were taken last year relative to the Advanced Lightweight Torpedo (ALWT) and MK-48 Advanced Capability (ADCAP) Torpedoes to accelerate their Fleet introduction. We have taken positive management actions, including cost and design reviews, to assure that program costs are controlled and their schedules are maintained. The Light Airborne Multi-Purpose System (LAMPS) III Weapon System is completing a very successful test and evaluation phase this year, and the management efforts of 1981 were focused upon the tasks of transitioning to production. This system is planned for installation (including backfit) on the FFG-7, CG-47, and DD-963 classes.

Anti-Air-Warfare.—Anti-Air Warfare requires our continued high priority action. Soviet cruise missile improvements necessitate Research and Development emphasis in over-the-horizon surveillance; outer air battle; area defense systems; and point defense systems. The AEGIS program and other closely related Research and Development efforts will provide U.S. surface forces, specifically the new CG-47 Class cruisers and the next generation Battle Group-capable destroyer, with a new generation of radars and combat systems for defense against the growing air threat to the Fleet. Similarly, programs are proceeding to modernize our existing surface fleet. A program has been initiated for the modernization of the FFG-7 combat system, particularly the fire control system; and the New Threat Upgrade program, now completing Research and Development, will significantly enhance the Anti-Air Warfare capability of our existing Battle Group cruisers and destroyers.

Over the past two decades, our Anti-Air Warfare weapons both surface and air launched have been upgraded in an evolutionary way as the threat has changed. Considerable effort is planned in fiscal year 1983 to define the Standard Missile-3, which will be the next development of a ship-launched area defense missile. The time to do this is particularly opportune with the planned introduction of the new Vertical Launching System for our surface combatants that significantly removes the volume constraints that existed with the older rail-type launching systems. A critical decision will be whether to continue with further improvement of the existing baseline missile or to embark upon development of a new baseline system that takes full advantage of the vertical launcher volume. In the case of the long-range air-to-air missile, a complete review of options for improving the Phoenix (AIM-54C) will be undertaken including the examinations of new system proposals.

Strike/Anti-Surface Warfare.—These warfare areas are being enhanced by the reactivation of the battleships and the modernization of their weapon systems. By utilizing armored box launchers and the new vertical launchers, the Tomahawk missile system is being distributed to more surface combatants, and this enhanced strike capability will be provided earlier. The attack variant of the F/A-18 aircraft is currently being evaluated, and it will provide a capable and very maintainable light-attack system. In accordance with executive direction, the devlopment of the BIGEYE bomb, which provides an additional strike capability, is being accelerated to meet initial production in early fiscal year 1984.

Air.—There are two aircraft programs which will fill future needs—Vertical/Short Takeoff and Landing and the Undergraduate Jet Flight Training System (VTXTS). The Vertical/Short Takeoff and Landing System development program is concentrating on technologies that could produce an aircraft that would, in the future, replace existing tactical, conventional aircraft. Recognizing the projected jet pilot trainer aircraft shortfall, the Navy is structuring an affordable Undergraduate

Jet Flight Training System program that will meet the requirement in a timely fashion. This year we will complete development and operational testing of the F/A-18, and the Marine Corps will receive the first squadron. We plan to continue evolutionary improvement to current aircraft such as A-6, F-14, S-3, and P-3 relative to engine, electronic, and other technology advances.

Command, Control, and Communication.—Our Command, Control, and Communication programs are structured to provide an increasingly robust, improved, and integrated battle-management capbility. Joint Tactical Information Distribution System and Extremely High Frequency Satellite Communication System have recently been approved for Full-Scale Development. Steps have been taken to avoid requirement "creep" or changes after the start of Full-Scale Engineering Development; contractor incentives will be provided to attain low-unit cost; and future improvements will be sought as part of a pre-planned product improvement effort to insure a proper balance of performance, cost, and schedule risks compatible with the needs of the Battle Group. These systems are tied to satellite programs such as MILSTAR and Fleet Satellite which need your support in order to achieve the required Command, Control, and Communications capabilities.

Amphibious Assault.—The Marine Corps' highest priority development program, the Marine Medium Assault Transport, a replacement for their aging CH-46 and CH-53A and D model aircraft, is being restructured within a new joint development program. This need and requirement for similar capabilities in other mission areas of the Navy, Army, and Air Force will be satisfied with a common advanced technology airframe, such as the XV-15 tilt rotor. The Marine corps is also working in a joint effort with the Army to fulfill requirements for direct fire support and mobility through the joint Light Armored Vehicle program, which is basically an off-the-shelf solution; and through the newly formulated Mobile Protected Gun System, which merges separate Marine Corps and Army programs for a modern agile vehicle with substantial firepower provided by a high technology 75mm gun development. I welcome this joint program; and given the cooperation observed so far between the Services and also with the Defense Department staff, I am confident that these programs can succeed. General Moore will discuss these and other Marine Corps Research and Development programs in more detail in his statement.

Mine Warfare.—Our new family of offensive mines will provide a valuable complement to our defense in-depth approach to Anti-Submarine Warfare. The CAPTOR mine will complete tests later this year to verify improvements. subsequently, we anticipate going to the planned full-production rate. Quick Strike, which provides a shallow water capability, is in production, and our Research and Development improvement program for Quick Strike is developing a new target detection device using advanced technology. This development uses a form of preplanned product improvement and will provide additional flexibility to meet threat changes. The Medium Depth Mine concept proved not to be affordable, and we are currently restructuring the program to provide a development which will be affordable and effective in providing the third mine required to complete the new family of offensive mines.

The MCM-1 ship and its integrated mine countermeasures system was approved for build of the lead ship and Full-Scale Development of the "combat system." This effective system will give the U.S. Navy and its allies an ocean-going mine countermeasures ship and system. We are also developing an MSH-1 Ship and its combat system to provide a low-mix capability for coastal, shallow-water mine countermeasures operations.

Turning now to the Navy Research and Exploratory Development programs, the so-called Technology Base, I would like to make several points. First, it is a matter of record that the impact of these programs has been substantial. Tactical towed-acoustic arrays, off-board chaff, radar-absorbent coatings, very high-powered lasers, kinetic penetrators, and the freeze preservation of blood are but a few very significant products from Navy Technology Base investments during the last decade. Second, the potential for maintaining this impact in the future exists today in the program described in the budget request being submitted. Finally, history shows clearly that nations which fail to stimulate and nurture the opportunities to be derived from science and technology, or those which stifle, limit, or fail to recognize the relevance of technology to meaningful naval application, are soon relegated to positions of strategic and tactical inferiority.

As a result of the Vietnam War and series of Presidential and Congressional budget adjustments, the Navy's investment in the Technology Base (6.1 and 6.2) has shrunk to 16 percent of the total Research, Development, Test and Evaluation, Navy Appropriation from its peak of 35 percent in 1965. While there are valid reasons for this shrinkage, which we recognize, we have paid a price.

Opportunities for technological improvements in Chemical Warfare/Biological Warfare defense, nuclear effects on tactical systems, over-the-horizon surveillance, and secure communications, to name some of the most significant, have not been prosecuted with the vigor we would like. It is to address these and many other vital areas that I ask your support for the $853M Navy Technology Base program we are requesting for FY 1983. This provides some real growth which will be used to enhance or initiate technology programs in areas of crucial concern. These programs will continue to be conducted as joint efforts involving industry, government, and university scientists and engineers.

Recognizing the need to get the most out of our Technology Base dollars, we have, over the last two years, completely restructured the Navy research and exploratory development planning process. The Offices of Naval Research and Technology have been co-located and now operate in concert. The continuing primary objective of these organizations is to maintain a strong Navy Technology Base and promote the earliest exploitation of science and technology relevant to Navy and Marine Corps needs.

The overall Research, Development, Test and Evaluation program which has been submitted for fiscal year 1983 is sound and balanced between low-risk developments to speed up the process and those to advance the technological frontier. The Department of the Navy is fully committed to implementing the Weinberger-Carlucci Initiatives which will shorten the acquisition cycle and minimize future acquisition costs. In particular, this program takes positive steps to implement my priorities for Research and Development. It continues the strides begun in fiscal year 1982 to recover our margin of safety; and the systems being developed are required to provide the modernization to support and complement the 15 Battle Groups as they provide for us the necessary "command of the seas." Finally, I am satisfied that the Research and Development increases in the strategic developments have not overly impacted the expenditure balance with general purpose forces.

Mr. Chairman, I wish to thank the Committee for the guidance and support provided in the past and look forward to participating in a continued fruitful relationship in the future. At this time, I stand ready to answer your questions. Thank you.

STATEMENT OF BRIG. GEN. JACOB W. MOORE, U.S. MARINE CORPS, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND STUDIES

General MOORE. In my posture statement I have outlined a program that will allow the Marine Corps to maintain its sustainability and mobility. We continue to set up an R. & D. program that enables us to carry out our basic mission of amphibious assault and capability anywhere within the world.

Our program is developed to enhance the individual infantryman's ability to get ashore and perform once he gets ashore and provide him with supporting arms that are so necessary and vital to the members of our Marine ground team.

The Marine R. & D. program continues to be structured on a strategy that minimizes high-risk development. We look to continue to mature our weapons system through product improvement programs, and we look at the low-risk state-of-the-art technology.

Today I will not attempt to cover very many of our programs, but I would like to just cover a few with you.

First of all, on the M-16 we are in a product improvement program to enhance the individual rifleman. We have improved the barrel and added a new twist to give us accuracy and range and a new stock. This program will replace our current M-16.

To fill the void within that infantry squad/platoon we are looking at the Shoulder Launched Multipurpose Assault Weapon, which will give us target capability against bunkers, masonry, and also armored personnel carriers. This is a 2-year program and gives us an IOC of 1984. The program is on track and we are very excited about it.

As we testified before the committee and Congress some 2 years ago, the next program is one that has been supported to fill a very present void that we have in connection with the threat. That is, firepower, tactical mobility, and agility on the battlefield.

We are presently with the Army in a joint Light Armored Vehicle program and these next 4 slides (slides deleted) show you the 4 candidates that are undergoing tests, where we have 16 vehicles. The program will undergo a testing of modified off-the-shelf vehicles, where we will select with the Army, a vehicle and then enter into production in July.

The schedule that is coming up next outlines our total family of light armored vehicles.

Senator COHEN. If I could interrupt, I have heard some criticism that you are going beyond off-the-shelf items. There are charges of goldplating, that many of these other LAV's around the world are coming off the shelf, and the Army and Marine Corps are going into something different.

General MOORE. I understand your comment and some time ago when it was raised we went back to the program, and the Marine Corps and Army have gotten together and I would like to assure you today that we are currently with a program that will allow us to put the 25mm Bushmaster gun on these vehicles and bring them in at low cost.

We are aware of your concern and we want to bring them in without entering into a lot of changes. The program schedule as it stands now continues with the first company of vehicles with an initial operational capability of 1983.

Another program that we are entering into that gives us firepower is our mobile protected gun system. We are with the Army in developing a 75-millimeter automatic cannon as a weapon system for this vehicle. We are looking for a helicopter transportable vehicle which will give us firepower for our vertical assault troops.

The Marine's primary amphibious assault vehicle is the landing vehicle tracked (LVT7). We have just completed the enhancement of this program through the R. & D. plans and we are entering into contract for 985 of these for rehabilitation and some 329 reproduction vehicles.

The follow-on vehicle, the LVT(X) that we will be looking for in the future will include a lower silhouette and give us improved mobility. This particular vehicle will be set up for operation ashore whereas the previous vehicle was optimized ship-to-shore.

In our command and control area, we began some time ago to produce a system that would allow us integration of all of our supporting arms. The Marine Integrated fire and air support system (MIPASS) will allow us, on the future battlefield, to coordinate all of our supporting arms, mortars, artillery, and naval gunfire. This is proceeding on schedule and our hardware is basically complete.

To enhance our command and control, a program that was briefed before the Congress last year, our position locating reporting system (PLPS) is one that would give us the capability in combat not only to know where we are, but to know the location of other elements of our command. This particular system will give us the capability of identifying a ground user unit within 15 to 25 meters or airborne unit within 100 meters.

We believe this program is extremely important to us in the near term. It is here today, we have tested it and the test was very successful. We are looking to an appropriation to support this as we were in the 1982 budget. To date, as you are well aware, the funds were not provided to us in the last budget, but we are seeking those funds for an Army joint program which is extremely necessary to execute our tactical operations.

Gentlemen, I have attempted to cover only a few of our most important programs in view of the time. I would like to say that the programs that I have described here today, the Marine Corps is very concerned about and continues to seek your support on these and other Navy programs such as the LSD-41. We seek your continued support as your Marine Corps stands ready as your combatant in arms for employment anywhere in the world.

[The prepared statement of Brig. Gen. Jacob W. Moore, follows:]

PREPARED STATEMENT OF BRIG. GEN. JACOB W. MOORE, U.S. MARINE CORPS, DEPUTY CHIEF OF STAFF FOR RESEARCH DEVELOPMENT AND STUDIES

Mr. Chairman and distinguished members of the committee, it is a pleasure to appear before this Committee for a second year to testify on the Marine Corps' Research and Development programs. Before presenting our views on the posture, plans, and programs of the Marine Corps Research and Development effort for fiscal year 1983 however, I would like to thank the Members of the Committee, and indeed, the entire Congress, for the support provided to Marine Corps R&D efforts during the past years. We in the Marine Corps fully appreciate that the leaders of this nation have been forced to address many difficult issues, and to balance many competing priorities, in their efforts to improve our nation's defense. In this regard, we are extremely conscious of our responsibilities to make the best possible use of the funds appropriated for the Marine Corps R&D effort. We are proud of the reputation the Corps has for frugality, and, in an effort to preserve that reputation, the Marine Corps Research, Development, Test, and Evaluation budget request we are presenting for FY 1983 stands at $227.0 million. This figure is 3.6 percent of the Department of the Navy's RDT&E request for the same period. May I point out, however, that our share of the Navy's budget does not include funds to develop aircraft for Marine aviation, such the F/A-18, the AV8B, and the CH53E, because Marine aviation is an integral part of Naval aviation. As such, it is funded entirely by the Department of the Navy.

The traditional role the Marines have played in the overall defense of our nation has been to provide ready, responsive, and highly flexible forces with a wide spectrum of capabilities. In light of the changes on the international scene in the past year, that role has in no way diminished.

The Marine Corps' global perspective and the general disposition of our Fleet Marine Forces remain at the same high readiness level as last year. That posture is, in turn, a direct reflection of our nation's position as a maritime power with worldwide interests and responsibilities that must be safeguarded. It also reflects the basic mission of the Marine Corps to provide Fleet Marine Forces of combined arms for service with the fleets. Fleet Marine Forces, operating in concert with the Navy, make up a force that is able to project integrated and flexible power; these Forces are unique to the United States. They provide a major portion of the U.S. capability to project power overseas and to conduct forcible entry operations when required.

Examples of this flexibility are Marine Air-Ground Task Forces (MAGTFs), which can be tailored to satisfy specific mission requirements. They are also capable of conducting the full spectrum of military operations ashore, at varying levels of intensity. Each MAGTF is logistically sustainable from the sea, and its capabilities can be integrated not only with those of the other Services, but also with those of our allies.

Marine amphibious forces provide capabilities essential to the Navy's sea control mission and to its efforts to maintain vital access to the sea lines of communication. Virtually all of the world's coastal areas are susceptible to amphibious assault. Thus, Marine Corps amphibious forces can seize and control strategic choke points, entry points, and advanced bases. Such flexibility is part of a global reach that can take full advantage of the Soviet tactical and strategic vulnerabilities that are scattered across the extensive littorals they must defend.

In order to accomplish the Marine Corps' basic mission of amphibious assault capability anywhere in the world, we must pursue all those programs that could possibly enhance the fighting capability of the Marine infantryman. These programs may be broadly defined as whatever helps to get the Marine ashore quickly, enables him to maneuver, and effectively provides him with coordinated, timely, and accurate fire support.

The Marine Corps R&D strategy emphasizes acquiring operational capabilities that minimize high-risk exploration, extensive development cycles, and unilateral acquisitions. Our strategy focuses instead on exploitation of low-risk, state-of-the-art technology. Where possible we work to extend the life span of existing equipment by improving it. We also cooperate with other Services to develop or buy weapons and equipment that meet unique Marine Corps operational needs. In addition, we join in the developmental efforts of the other Services to influence the design characteristics and performance capabilities of equipments that meet common requirements. We resort to unilateral procurement only when the requirements to be met are peculiar to amphibious warfare. By working in this way, the Marine Corps avoids duplicating R&D efforts and wasting scarce resources.

MARINE CORPS PROGRAMS

With this general introduction concluded, I would now like to direct the Committee's attention to the R&D programs that we believe are going to increase the combat effectiveness of the Corps. We fully understand that the limited resources available must be used prudently. Thus, our programs strike a balance between vitally needed modernization and support for current readiness and sustainability. Our emphasis during the 1980s will be to increase firepower significantly by introducing new weapons and by modernizing existing systems.

INFANTRY BATTALION ENHANCEMENT PROGRAMS

Small Arms

One of our primary concerns is to materially improve the capability of the Marine on the ground who must defeat the enemy in close combat. To this end, the Marine Corps is participating with the other Services in the Joint services Small Arms Program (JSSAP) to develop and sustain a long term, coordinated, small arms development program. The program is oriented toward developing new or improved capabilities in rifles, machine guns, grenade launchers, and other small arms. Improvements in the M16A1 rifle, the addition of the Squad Automatic Weapon (SAW) (Initial Operational Capability Fiscal Year 1983), 60 MM mortar enhancement, and 81 MM mortar development will all provide the Marine infantry battalion with significantly enhanced firepower. Another impressive infantry weapon, which is not a JSAAP product, is the Shoulder-Launched Multipurpose Assault Weapon (SMAW) (18 per battalion; Initial Operational Capability Fiscal Year 1984). It will provide our forces with a lightweight, man portable assault weapon that can destroy bunkers and concrete strong points encountered on the battlefield.

Modular Universal Laser Equipment (MULE)

Delivering effective supporting fire depends on how well targets can be identified and on accurate ballistic solutions. The Marine Corps is developing a precision ground laser rangefinder and designator, the Modular Universal Laser Equipment (MULE), which is man portable and can be used by artillery forward observers, forward air controllers and naval gunfire spot teams, to designate targets for laser guided munitions. The introduction of precision guided laser munitions, such as laser guided bombs, the Laser Maverick, and the Copperhead cannon-launched projectile will enable forward observers to achieve first round hits against both stationary and mobile targets. Using the MULE, forward observers will also be able to determine the range and azimuth to the target for conventional artillery, naval gunfire, and air support, thereby significantly improving weapon effectiveness. The MULE will be ready for the battlefield in 1984.

Artillery Computer System

The Artillery Computer System (ACS) is being developed to replace the existing tactical and technical fire direction system. The current system is slow and inefficient even when augmented by the antiquated Field Artillery Digital Automatic Computer (FADAC). Although the existing system can be made to work, it contains many human interactions and computations that frequently degrade the timeliness and accuracy of support. The FADAC that augments the manual system was put in the field in the mid-1960s. It is unreliable and is nearing the end of its supportability. ACS will be a computer-based command, control, and communications system that will provide for tactical information recording, processing computation, manual entry, display, control, and digital transmission of tactical and technical firing data from the battery to individual artillery pieces. ACS will consist of a computer unit, computer programs, display/entry systems, power supply, printers, and ancillary equipment. At the battery level, it will include Gun Display Units and Section Chief Displays that will communicate fire commands in digital form, either by wire or radio, from the battery level ACS to the individual howitzer sections.

The Marine Corps previously participated in the Army's Battery Computer System (BCS) until 1979. Due to high procurement costs, our concern with the status of artillery battery level tape, and the availability of more suitable alternatives that could better satisfy the Marine Corps requirements, a decision that we should no longer participate was made. Overall, when compared to the BCS, the ACS is lighter, more mobile, has more communications channels, and is less expensive.

ANTIARMOR AND TACTICAL MOBILITY

I would now like to turn the Committee's attention to our efforts in the areas of anti-armor capabilities and tactical mobility. Several of the programs I have spoken of in my remarks to this point will strengthen and enhance the ability of units to maneuver against armor. The next two programs I want to bring to your attention will, in addition to providing firepower and anti-armor capabilities, also improve tactical mobility. Tactical mobility is the means to do two things: first, to close with and destroy the enemy, and second, to provide the logistical support to Marine forces in a highly mobile battlefield environment—the most likely scenario of the modern battlefield.

Light Armored Vehicle (LAV)

The Marine Corps has an urgent requirement to field, as rapidly as possible, a family of light armored vehicles (LAVs) to provide not only fire support, but also the tactical mobility necessary to combat the increasing mobility and firepower of threat forces. The LAV acquisition strategy is directed toward the procurement of modified, off-the-shelf armored vehicles/weapons systems, which, because they are based on the use of a common chassis, have the potential to be developed into a family of mission variants. Candidate test vehicles were procured during September of 1981; and a procurement decision is expected in July of 1982. By using off-the-shelf LAVs, the Marine Corps will be able to attain an initial operational capability of one company of LAVs in 1983. With this capability, our fighting units will be able to increase both the mobility and the firepower of helicopter lifted maneuver units.

Mobile Protected Gun Systems (MPGS)

As helicopterborne assaults are presently conducted in amphibious operations, our assault forces land without a highly maneuverable, direct fire support weapons system that is helicopter transportable and can be used against armored forces. The excessive weight of tanks precludes their use in other than surface assault operations. To correct this deficiency, the Marine Corps and the Army are jointly developing the Mobile Protected Gun System (MPGS). Operational capability is projected for the late 1980s. Our joint acquisition strategy provides for the analysis of information provided by the Armored Combat Vehicle Technology (ACVT) program, and ongoing conceptual design studies. From this information, a Defense Systems Acquisition Review Council I decision in September of 1982 will determine which vehicles will advance into the Demonstration and Validation phase. The Marine Corps and the Army have agreed to jointly develop the 75 MM Automatic Cannon as the primary armament for the MPGS. This and other anti-tank modernization initiatives are required to counter enemy tank capabilities and to improve the overall mobility of Marine forces on the battlefield.

AMPHIBIOUS ASSAULT VEHICLES

Lift/logistical support

Landing Vehicle Tracked (LVT7A1) program

The most important Marine Corps R&D effort is concerned with developing amphibious assault vehicles. The Marine Corps is now using the Landing Vehicle Tracked (LVT7) to execute surface assaults. This vehicle was introduced into the Fleet Marine Force in 1972 with a planned lifespan of ten years. The LVT7A1 program is an effort to extend and upgrade the present LVT7s with state-of-the-art improvements required to fill the gap during the years 1982–1990's. Some of the more significant improvements are: a new engine and transmission; night driving capability; a more efficient ventilation system for the troop and engine compartments; better fire protection; improved reliability and maintainability and the addition of secure voice communications.

Landing Vehicle Tracked (experimental) (LVT(X)/Stratified Charge Rotary Combustion Engine (SCRCE).

The follow-on vehicle to the LVT7A1, the LVT(X), is presently in the conceptual stage and it is projected to be operational in the early 1990's. The design of the LVT(X) will not only increase mobility in ship-to-shore movement but also improve land warfare capabilities once ashore. The LVT(X) will have significantly improved cross-county mobility and agility. It will afford better troop protection, offer a lower silhouette, and provide increased firepower. This vehicle will be powered by a high horsepower-to-weight ratio engine. Although several engine designs are under study, the Marine Corps is continuing to develop the Stratified Charge Rotary Combustion Engine (SCRCE). This engine, if it lives up to the promising potential exhibited over the two year period it has been under development, will provide the Marine Corps with an efficient power plant, not only for the LVT(X) but also a single rotor version of this rotary engine may power the MPGS discussed earlier. The rotary engine is characterized by its simplicity of design, low weight and small size to power ratio, competitive fuel economy and multifuel capability. It also has (in comparison with diesel engines) a low noise level and an easy starting capability at low temperatures. Unlike a diesel engine it emits no start-up smoke (desirable in minimizing vehicle signature). The benefits of this engine to the Marine Corps are that it provides for smaller and lighter vehicles with no concomitant reduction in horsepower, simpler maintenance, versatility and economy in fuel utilization.

Landing Craft Assault Cushion (LCAC)

The Navy's LCAC program represents a conceptual and technological breakthrough in ship-to-shore movement. The keen interest the Marine Corps has in this program will intensify as the program continues to develop. The LCAC's capabilities are well known: speeds up to fifty knots, sixty ton (or better) payload, extensive operating ranges, accessibility to 70 percent of the world's littorals, and both across-the-beach and inland capability. No maritime nation can ignore the potential of the LCAC. Congress has strongly supported this important program. With the current contract for continued design and long-lead funds for initial production, we expect the introduction of this revolutionary craft by 1986. Additionally, the Marine Corps maintains a very high interest in the LSD–41 class ships, for which the keel for the USS Whidbey Island was laid last August. LSD–41, the first amphibious ship to be started in five years and the first to be funded in ten years, is designed to carry the landing craft air cushion (LCAC), as well as conventional landing craft. It represents a commitment to new technology at low risk. We will need more of these ships in the future to replace the aging well-deck ships which carry our assault craft and project power from the sea.

COMBAT SERVICE SUPPORT

Motor Transportation/Field Logistics System

The modernization of our motor transport fleet continues to be one of our top priorities in the area of combat service support. Procurement of a new family of vehicles begins during this fiscal year. This new group of motor transport assets, which includes the High Mobility Multipurpose Wheeled Vehicle (HMMWV) and the Dragon Wagon, will provide your Marine Corps with two important capabilities: first, to move weapons systems over previously inaccessible terrain, and second, to move containerized cargo and standardized tactical shelter systems rapidly. Initial procurement of the remaining items of equipment of the Field Logistics System, e.g., shelters, containers, material handling equipment, water purification equipment, and utilities distribution equipment, will also take place during this fiscal year. These systems represents very important improvements that will significantly enhance the logistics support capabilities of our Fleet Marine Forces (FMF).

COMMAND, CONTROL, AND COMMUNICATIONS

MAGTFs are organized, equipped, and trained to operate in a totally integrated, combined arms structure, which enables commanders to control all elements of the team, including ground combat, aviation, and logistics elements. To accomplish these tasks, unique command, control, communications, and intelligence capabilities are required. Our ongoing R&D programs for C3I systems, as these are called, will satisfy that requirement.

Tactical Air Operations Central-1985 (TAOC-85)

In the Fleet Marine Force, the air element of the Marine air-ground team plays a significant role in seizing landing force objectives. The effectiveness of air support is, of course, measured in terms of how responsive it is to the needs of ground forces. This responsiveness can be achieved by an air command and control system that can give the tactical air commander the timely information he needs to make operational decisions. The existing Marine Command and Control System is based on operational concepts and technology of the 1950s and 1960s. The Marine Corps is currently developing the Tactical Air Operations Central-1985 system to replace the present system because, by 1985, the current system will be worn out, be logistically unsupportable, and be incapable of meeting the demands inherent in air command and control functions. The TAOC-85 system will incorporate the current technology displays, computers, and communications equipment necessary to counter future threats effectively. Additionally, it will make maximum use of off the shelf equipment that can interface with systems used by other services and by our NATO allies. It will also have the mobility and flexibility to be moved by helicopter and will provide support that is appropriate to the size of the unit involved and the intensity of the air threat.

Marine Integrated Fire and Air Support System (MIFASS)

For the ground element of the Marine air-ground team, we are developing the Marine Integrated Fire and Air Support System—MIFASS. With this system we can operate, control, coordinate, and deliver mortar, artillery, naval gunfire, and close air support. MIFASS will be automated, lightweight, and provide real time information. The MIFASS system will interface with other command and control systems, such as the TAOC-85. The Marine Corps is developing MIFASS unilaterally, because no other system, either existing or under development, can integrate the control and coordination of all supporting fires. The initial operational capability for MIFASS is 1987.

Tactical Combat Operations System (TCO)

The Marine Corps is required to provide selected automated assistance to commanders and their staffs so they can make tactical decisions on how to employ forces and allocate resources. On a battlefield characterized by greater mobility, more widely dispersed units, and a higher tempo of operations, such tactical decisions must be made quickly. They must also be based on accurate, real-time information.

The Tactical Combat Operations system will automate many of the repetitive tasks that are now performed manually, thus gaining precious time for decision making and battle management. TCO will provide the battalion commander with immediate access to intelligence available from MAGTF headquarters. With TCO, operations plans and orders will be available for review and action immediately upon promulgation. Through this greatly enhanced access to information the battalion can accomplish its tasks more quickly and with better information than is possible over voice radio and teletype, or by manual delivery. When TCO and MIFASS are integrated, the battalion commander will be able to closely link the scheme of maneuver and fire support.

Position Location Reporting System (PLRS)

The Position Location Reporting System (PLRS), which was authorized but not funded for procurement during Fiscal Year 1982, is designed to provide commanders and equipped units with the information needed to identify friendly units and their positions instantaneously. In 1983, this joint Army-Marine Corps development could well be in production with initial units scheduled for delivery to tactical forces in 1984. PLRS will interface with the Marine Integrated Fire and Air Support system. The PLRS/MIFASS integration will provide commanders with selected automated assistance to accomplish command, control, and communications functions of the MAGTF. PLRS will provide accurate location of friendly units, both air and ground, without voice communications. Besides generating precise real time position information, PLRS will provide zone avoidance and bearing/range data to other unit locations, as well as corridor guidance and navigation to airborne users. Due to these capabilities, PLRS will greatly enhance the effectiveness of all tactical Marine Corps command and control systems.

Unit Level Switch (ULS)

In communications, the Marine Corps is still using unsecure telephone switching systems. The projected level of combat intensity in the future demands a more responsive telephone switching system. Under the Joint Tactical Communications Program (TRITAC), the Marine Corps has been assigned the responsibility to develop a family of unit level switches for all the services. The ULS program consists of three discrete development efforts: a message switch to transfer digital data securely, and two circuit (or telephone) switches to move and switch voice or telephone traffic securely. The initial operational capability for these switches is 1986.

Digital Communications Terminal (DCT)

The Digital Communications Terminal is a hand held, data communications device that can be used in a variety of applications, including automated command and control systems. It will interface with inventory VHF, UHF, and HF radios, or with standard voice grade telephone circuits. This unique device will allow user units to rapidly compose, transmit and receive free text, preformatted and graphics data. DCT will have a significant impact on the timely execution of the ground scheme of maneuver.

SPECIAL INTEREST/NAVY PROGRAM

I would now like to invite the Committee's attention to an area that concerns the Marine Corps very deeply. This is an area that has been a major concern to all Marine Corps Commanders. I am speaking of naval gunfire, where there is an alarming deficiency. All of us are aware that amphibious power should never be used without readily available, all-weather fire support. Naval gunfire provides the primary source of that support before Marine artillery is established ashore. Right now, our naval guns are simply deficient in size and number. There are no new naval gunfire related programs under development or in production. The five inch, semi-active, laser guided projectile, in conjunction with the SEAFIRE targeting system, could remedy some of this deficiency. In addition, a conceptual 15mm Naval Gun promises increased range and lethality as well as commonality with Army and Marine Corps ammunition. We strongly support continued exploration of the potential of these systems. Reactivation of the IOWA class battleships will reintroduce major caliber guns now missing from the fleet. The USS New Jersey, for example, will provide massive firepower capability at a cost significantly lower than new construction of a lesser ship.

I hope the Members of the committee will bear in mind that, in this statement, I have discussed only the most significant Marine Corps R&D programs. I have left out other Marine Corps R&D programs which, although small, are essential to our role in the nation's defense. Past R&D efforts proposed by the Marine Corps and supported by the Congress have contributed significantly to our ability to stand ready as the country's premier fighting force.

One final area, which I would be remiss in my testimony if I did not address, and which is essential to our success on the modern battlefield, relates to the chemical warfare environment. As the Commandant has already reported to you, our capabilities in this area are marginal. Technological advances, new equipment, and continued Congressional and Defense Department support are doing much to overcome these deficiencies. However, much more needs to be done. The Soviet chemical warfare threat is well known to the Members of this Committee. I am confident that, in recognizing this threat you will continue to support the initiatives of all the Armed Services in dealing with it.

The Fiscal year 1983 R&D program that I have outlined will support our efforts to execute the Marine Corps' unique mission as we continue to serve as the nation's force-in-readiness, and as we fulfill our obligations as a crucial element in our national defense strategy.

Mr. Chairman, and Members of the Committee, on behalf of the Marine Corps I thank you for this opportunity to explain our R&D programs. We request your continued support.

Senator **Cohen**. Senator Byrd, I would yield to you first since you did not have a chance to make an opening statement.

Senator **Byrd**. Admiral, last year DOD and the Navy brought forth a requirement of 90 attack submarines. This year it is 100. What has happened about this increase?

Admiral TROST. Senator Byrd, those levels are both levels that were achievable goals. Fiscal constraint within a balanced Navy had driven those numbers in each instance. The figure of 90 which was used last year was the goal that the Navy attempted to achieve over a number of years.

As you are aware, our SSN building levels have never been adequate to achieve a higher goal. We now believe within the balanced Navy we are seeking that we can also maintain a building level of nuclear attack submarines which allows us to achieve a goal of 100 ships which will nicely complement that 15-battle group force which I noted on my opening statement.

Senator BYRD. In viewing your attack submarine program, considering the fallout of older submarines, can you get to 100 boats and stay there with the present building programs?

Admiral TROST. We can get to that level if we achieve and maintain a level of three to four submarines per year in our construction program.

Senator BYRD. Are we likely to see further increases in your requirement in attack submarine levels in future years?

Admiral TROST. I think in all likelihood you will see the force level goals that will be approximately 100 nuclear attack submarines as the goal the Navy will attempt to build and to maintain.

Senator BYRD. Now, as I understand it, we will have a subsequent session dealing only with aircraft carriers, and dealing specifically with them.

Senator COHEN. Yes.

Senator BYRD. I will withhold any questions on aircraft carriers until that time.

I may have a few questions to be answered for the record.

Senator COHEN. Let me come back to the submarine program. You have $1.027 billion requested for two nuclear-powered attack submarines; $416 million is requested for long-lead funding for future submarines of this class. Last year we had $397.9 million provided by Congress for long-lead equipment, and we expected the Navy would request funds for three submarines this year. Yet we have only two.

Why is that?

Admiral TROST. Purely a question of affordability within the force levels and the fiscal constraints we face in putting together this year's program.

Senator COHEN. Well, we have had the construction of eight of these subs authorized in the past 5 years. Is that right?

Admiral TROST. Yes.

Senator COHEN. So, you have to have a construction rate in order to meet the Navy's stated goals of three a year to sustain that?

Admiral TROST. That is correct.

Senator COHEN. If you added a third attack submarine to the budget, how much would that cost?

Admiral TROST. I would have to respond for the record. I don't have the costs.

Senator COHEN. I am not suggesting we do that without discounting it in some other area, but let me completely explore that particular possibility.

Without making any judgment, let me go back to the Trident.

Mr. Sawyer, in the fiscal 1983 budget the account is $18.6 billion, with $2 billion for the procurement of two Trident submarines.

Why do you request two submarines at this time and what would be the impact on the funding if only one of those ships was authorized for this fiscal year?

Mr. **Sawyer**. The answer relates primarily to the force building and strategic issues. As you know, in fiscal year 1982 there was no Trident-class ship authorized and we wish to build these at an average rate of one per year. There was some advance funding authorized in fiscal year 1982.

Senator **Cohen**. I thought we had a long-lead authorization?

Mr. **Sawyer**. Yes; and so by fully funding the two we hope to meet our objectives with regard to total deliveries over the 5-year program. These ships are approximately $1.2 billion apiece for full funding.

In answer to your 688 question, it is approximately $580 to $600 million.

Senator **Cohen**. Not right now, but at least for the record, would you give me a profile of the impact it would have upon Newport News and Electric Boat depending upon what happened, whether you went with two Tridents and two SSN's or you split it up and went one Trident and three SSN's?

I think we would like to at least see what the impact would be upon the yards and also consider what the impact will be from a budgetary point of view.

Mr. **Sawyer**. I will do that, sir.

Senator **Cohen**. Mr. Paisley, I think you indicated in your prepared statement that you canceled about 40 programs in the past 6 months.

Let me give you a word about protocol now since you raised it earlier. There is a simple rule. That is, if you come up to the Congress and you expect us to be some sort of a partner in this process of building a national security defense system, then we expect to be treated like partners—not limited partners, but full partners.

If the Navy comes in or the Defense Department comes in and requests *x* billions of dollars and presents a case and Congress goes ahead and authorizes and appropriates the funds to do that, and there is a unilateral decision made to cancel that without informing the Congress, that is a breach of protocol. That is a breach of partnership. Then we are left without explanations as to why on the one hand you requested the funds and on the other they were unilaterally terminated.

There is a pretty simple rule that if you undertake to terminate programs or take actions which are inconsistent with programs mandated by the Congress, then you are going to run afoul of congressional sensitivities.

Now, you canceled 40 programs, and not right now, but would you give us a list for the record of the programs that were canceled and why they were canceled and why Congress was not notified and what systems are to fill the canceled programs' functions? Could you do that?

Mr. **Paisley**. Yes; we will do that.

[The information follows:]

R. & D. ITEMS REDUCED

Mr. **Paisley.** Senator Cohen, I will give you a general answer to some parts of your question and provide the rest on a program by program basis. First, the 40 programs addressed in my statement were cancelled at various stages during the course of the Development of the fiscal year 1983 Program and Budget for Navy R&D. We are not talking about funds already approved but funds recommended for inclusion in what was then a developing Budget. Thus there was no question of reprogramming existing funds. Secondly, as this was a program and budget development, funds associated with programs terminated were not moved to other programs on a one for one or even a one for two type of action. All terminations contributed to the effort to reduce our overall total to stay within guidance or budgetary constraints. similarly, it must be said that, in general, the programs in question were cancelled because they were of a lower priority than those funded in the budget; were assessed to present technical risks which were too high; required a cost profile which was not affordable when weighed with the performance improvement and/or need being satisfied; or cancellation was based on guidance received from higher authority including Congress.

In general, Congress was not notified concerning the majority of these cancellations. However, several of the programs, such as CAML, MDM, FFX, and I^{2}R Harpoon, had been the subject of considerable discussions between the Navy and Congress during the fiscal year 1982 budget development and approval, and others such as SEAFIRE were also discussed with the Congress.

In general, other systems were not identified to fill the objective(s) of the cancelled program. For example, CAML was to develop an additional mine laying capability; mine laying will continue to be accomplished with the existing assets such as A-6, A-7, P3, and B-52 aircraft. The I^{2}R Harpoon role, however, is to be satisfied by Tomahawk II (MRASM) and VLA-role was to be integrated into the Common ASW SOW System (although the reestablishment of two separate programs is now under consideration). Future plans for the mission objective of LRAAM/AIM-54D and Thor will be assessed in fiscal year 1983. Other plans for satisfying the objectives of cancelled programs are provided in the attached list, if available.

The basic requirements for programs cancelled do not remain unsatisfied. As noted, many of the programs were system improvements, systems support, tools to enhance/expedite technology, or were new capabilities. The decisions which cancelled new capabilities or systems improvement programs were based on determining that these efforts could be deferred and we could rely on current systems longer or that the planned programs would not achieve the objective. A-6/AWSACS is an example of such a program, as it was concluded to be unaffordable, but action is being taken to explore other means to improve the capability of the A-6 aircraft. In mine warfare, there is a need to consider the next generation mine and the operational requirements for moored mines. The Medium Depth Mine (MDM) was not a program with an acceptable acquisition strategy and funding profile, but action is being taken to determine the near-term operational need for moored mines and a concept and time frame for the next generation mine is underway. Thus, in general, the requirements for the cancelled programs have been transferred from the development phase to the planning phase. Such transfer is designed into the PPBS process in order to assure mission requirements are properly managed.

HULTEC Vulnerability Program ($3.7).
Navy Integrated BETA Support ($1.0).
Long Haul Communication Architecture and Integration ($0.3).
Coordination in Direct Support (CIDS) ($1.7).
Integrated Acoustic Comm Med. Data Rate Development (6.2).
Supertorch IRCM (6.7).
CAML ($0).
Guided Munitions Launch ($3.5).
ECM Tubes ($4.5).
Adv Surf Sonar (6.3 line) ($10.4).
Integrated Fire Support Coord (IFSC) ($3.5).
NOSS ($85.5).
NAVTOLAND ($7.2).
NAVPERS Accessions Systems ($1.3).
VLS ASROC ($28.5)—(Requirement to be satisfied by a Common ASW Standoff Weapon. This decision is currently being reconsidered in Navy.)
Dual Mini-Sins ($2.6).

Captor Seaside ($1.7).
Thor ($21.7).
Medium Depth Mine (MDM) ($38.0).
RECO ($1.8).
Buried Minehunt ($4.1).
HYPAM ($1.0).
H-46 Extended Range Fuel Tanks ($1.2).
IIR Harpoon ($38.7)—(Development terminated in favor of air-launched Tomahawk (MRASM). Decision followed congressional budgetary action in fiscal year 1982.)
RFX ($16.6).
DASS ($1.4).
A6/AWSACS ($48.0).
Madair ($3.6).
LR AAM/AIM 54D (—).
EMCARD ($2.7).
Maximum Performance Ejection Seat ($4.6).
F/A-18 Improvement (—).
Future Communication System ($0.2).
Computer Adaptive Test ($1.4).
AMRAAM OUE ($6.0).
Seafire ($22.6)—(Program terminated as a result of decision not to acquire 5" SAL GP.)
Weaponizing Prototype ($3.0).
Hydrus ($1.0).
HARM A/C Integration ($2.1).
FFX ($1.2)—(Terminated following fiscal year 1982 congressional budgetary action.)

Mr. PAISLEY. By the way, Senator, I could sure use a lot of support for canceling programs, because we have too many.

Senator COHEN. I agree with you. I am not disagreeing with the fact that they were canceled. But, I think if you are concerned about why Congress gets upset, I can tell you we would like to be informed and we would like to be told, before we read about it, that such a program was canceled.

I don't have disagreement, but we do have too many systems and too many programs. If we try to fund them at inefficient levels, we have a mess on our hands. I don't disagree with the cancellations. I just would like to be apprised of cancellations, certainly for those that pertain to this subcommittee. I am sure the other subcommittees feel the same way.

We want to be in this particular partnership and not just have a bill presented to us once a year with the message, "Fund it." That is all.

Mr. PAISLEY. I have no argument with that.

Senator COHEN. Let me come to the 5-year shipbuilding program, Mr. Sawyer. We mentioned the frigates. As I understand it, the construction rate is actually going to climb from two to three in fiscal years 1986 and 1987?

Mr. SAWYER. Yes.

Senator COHEN. Given the fact that there is more than one yard currently building frigates, why are you planning to reduce the construction in the intermediate years and increase it later? That would result in increased costs, not less.

Mr. SAWYER. That is a good question, Senator. Of course whether the rate is two or three, we couldn't maintain the current level of shipbuilders currently in the program and practically speaking we have three shipyards. Whether there are two or three ships awarded in 1 year, at least one shipyard would have to fall out of the program.

I am sure the answer to the question is really totally related to affordability at this time and our relative needs and priorities.

I think perhaps Admiral Trost could address that issue.

Senator **Cohen**. You have about $666.4 million for the construction of the two SSN's in 1983 and then two later, which will cost $774 million. You have a significant sum there.

Mr. Paisley, last year there were some last minute changes in the budget request and the administration asked for $50 million in additional money for the torpedo.

Mr. **Paisley**. I wonder, Mr. Chairman, if I might have Mr. Cann address that.

Senator **Cohen**. Surely.

Mr. **Cann**. Mr. Chairman, last summer we decided to make a complete review of that program and we found that the program that had been defined had not been totally defined in the sense that the all-engineering had been understood.

About 2 years ago, there was a pressing need to accelerate that program. The acceleration was approved, and then in the process of scoping the program to determine what was involved in the development, it became apparent that we did not have a firm handle on the scope of that activity.

As a result of our discovery of last summer, a complete review of the program has been run including a cost study which is about to be delivered to the Congress and a complete reorganization of the Navy and contractor management, including a change in the management personnel.

In addition to that the Secretary's Office as well as the Chief of Materials Office have instituted some management controls to properly implement the program at this time.

The answer is we completely underestimated the program the first time around.

Senator **Cohen**. What assurance do we have that it is not going to grow topsy-turvy?

Mr. **Cann**. I can say as a result of the efforts in the last 6 months, I am confident that it would be very difficult for the program to grow unless there are some serious technical problems. This is based on the very stringent controls to be placed on the improvements to the capability and on the strong changes we made in the management, especially in the industrial side.

They are taking this program much more seriously as evidenced by placing very senior management people in charge of the program.

Senator **Cohen**. Mr. Paisley?

Mr. **Paisley**. Could I say one other thing on this subject?

Having come out of industry and having seen similar problems, I think the bottom line on that program is bad management. It was within the Navy and within the contractor and we have taken corrective action.

Senator **Cohen**. I am not sure. What does that consist of?

Mr. **Paisley**. I think you have to pay attention to a program like that. It is a large program and it has technical problems and it has a very strong supportive requirement. People tend to think when they have a strong requirement, "Well, we can do this and we can do that."

Programs get out of bounds. It should have had more visibility, and they should have paid more attention to it. It was just fundamentally poor management for a lot of reasons. Now, they have restructured, they have changed the management, they have instructed the contractor in regard to what he should do from a management viewpoint and they have improved visibility of the program.

I think the strongest criticism I make of those sort of things is that they are always talking about what went wrong 6 months ago. If it went wrong 6 months ago you should have had the program in hand 5 months ago. They have taken corrective action that was required, and they are going to have to continue monitoring this program or they will have trouble.

Senator **Cohen**. My time has expired.

Do you have any questions?

Senator **Byrd**. I have one question.

In regard to the battleships, Admiral, the *New Jersey* and the *Iowa* have been funded and no funds yet have been authorized for a third and fourth. But the fiscal year 1983 budget would go forward with the third and fourth.

My question is: What would be the effect of delay to see the results of the *Iowa* and the *New Jersey*?

Admiral **Trost**. Senator Byrd, I think the principal result of the delay would clearly be a delay in adding a considerable and needed increased additional capability to our current forces. I am not certain what we would learn by delaying to see what happens.

We have a good idea of the capability of those ships in their earlier role of providing heavy gunfire support to our Marine forces in an amphibious situation.

We also know the capability of the Harpoon and Tomahawk weapons systems which would be added to those ships and we know that those ships would have a considerable impact in a peacetime deployed role and would be a demonstration of U.S. resolve in the area in which they are employed. They could add substantially to our capability as part of the surface action group as well as in support of carrier battle groups.

Senator **Byrd**. Those are wonderfully built ships and I am impressed with them. I think it is certainly worth experimenting and trying them. I am wondering if we wouldn't be better off to go with the two that we have already decided on and maybe delay a bit on the other two.

Admiral **Trost**. I would urge the Congress to support all four ships, since I think the capability that is added by two of those in each major fleet is substantial and the two certainly provide the kind of flexibility needed for foward deployment.

Senator **Byrd**. Would you refresh my memory as to the cost of each of these other two ships?

Mr. **Sawyer**. If I could inject one comment.

Actually the *Iowa* has not been funded, sir. We have only funded the long leadtime; procurements that is, the bulk of the request in 1983 is for the actual reactivation of the *Iowa*, and then there is

$94 million additional in the line for the long lead procurement of the third ship, the current requirement for the *Missouri*.

Senator **Byrd**. What did you say about the *Missouri*?

Mr. **Sawyer**. The fiscal year 1983 funding request has two elements. One is the balance of funding for the *Iowa*, which is the second battleship we plan to activate ($319.6 million), and the second element is the $94 million for advance procurement for reactivation of the *Missouri*.

Senator **Byrd**. There is nothing in there for the fourth one?

Mr. **Sawyer**. Not that I know of, sir.

Admiral **Trost**. The long lead for the fourth ship would be requested in the fiscal year 1984, along with the full funding of the balance of *Missouri's* reactivation.

Senator **Byrd**. Thank you.

Senator **Cohen**. Mr. Paisley, the Navy has requested $9.7 million for a new line for propulsion, electric drive. But I notice there is a line for exploratory development of the $53 million listed for nuclear propulsion technology, and zero for research into any other kind of propulsion.

My question is: Why is the Navy not exploring any other form of propulsion?

Mr. **Paisley**. You know, when we were driving in this morning I was talking to Gerry Cann about our whole budget activity for propulsion systems for the Navy, and we said we have programs funded for over $100 million in this area. I am going to ask him to talk a little bit about that point.

Mr. **Cann**. What I have to say won't take very long. I don't have all of the details right here, but I would be glad to provide them.

We have propulsion activities spread across a number of places for submarine and for the surface ship, there has been experimental work for electric drives.

Senator **Cohen**. There is zero amount of dollars for exploratory research other than nuclear propulsion?

Mr. **Cann**. We do have some improvement areas going on for gas turbines, and we have the Racer work going on which is funded and still on track for meeting those in the DDG–51 class.

A few years ago we had a 500 FT–9 engine, which we just about finished development but we didn't have an application for it. Most of the activities right now are trying to improve the current propulsion capabilities of surface ships that are in the fleet, and the L–2500 system is the workhorse.

Senator **Cohen**. I am talking about the exploratory development account. I am told that there could be some new improvements made in the diesel electric submarine if you could have some additional funding for the exploratory work on the battery. There doesn't seem to be any money for that in this account.

Mr. **Cann**. I would like to get some information on the battery. There has been a considerable volume of work done and there are some severe safety programs in that. To date we have used lithium batteries in a number of cases, but the overall safety of handling lithium batteries is not one that people have been interested in because of the explosive nature of these batteries.

Senator **Cohen**. I would like to have your justification for it in terms of the safety features and the rechargeable lithium battery. I would like to have it in detail because this committee has gone on record on at least three occasions saying it wants more options on the use of the batteries in submarines. The committee ought to have the benefit of making that decision as well.

Mr. CANN. We will be happy to supply it.

[The information follows:]

Mr. PAISLEY. In the area of rechargeable lithium battery we have investigated the small cell electrolyte and other concepts under basic research (6.1) program. It is to be transitioned to exploratory development (6.2) in fiscal year 1984 to develop two batteries, 20-ampere-hour first and then 500-ampere-hour. Funding requested is as follows: $500 for fiscal year 1984, $450K fiscal year 1985, and $400K, fiscal year 1986. Eventually it will be transitioned to advanced development (6.3).

As you can see, the development of rechargeable lithium battery technology is still in the basic research stage. At this point, I am not able to answer your question as to how much additional funding is required. We are conducting a new diesel-electric submarine study in which the battery problem will be given a closer look. It is expected that when the study is completed in August 1982, we will be in a better position to answer your questions on R. &. D. required as well as safety requirements.

Senator COHEN. Admiral, mines and mine warfare somehow always seem to fall out of the Navy budget whenever the squeeze is on.

Could you give us a funding profile for the record of the procurement of mines during the current 5-year plan? If you have it now, that is fine, and if you don't, would you provide it for us. Also tell us when we will reach our objectives?

Adminal TROST. I will be pleased to provide that for the record.

[The information follows:]

MINES

The funding profile for the procurement of mines is as follows:

[In thousands of dollars]

	Fiscal year					
	1982	1983	1984	1985	1986	1987
WPN:						
MK60 Captor [A]	116,700	151,400	183,300	193,300	206,900	125,300
Captor MODS	1,600	2,400	8,200	6,700	6,600	6,600
MK67 mobile submarine launched mine	11,100	22,900	27,100	19,000		
Initial spares	4,337	9,500	11,738	14,844	16,199	
Total WPN	133,737	186,200	230,338	233,844	229,699	131,900
OPN:						
Quickstrike [B]	21,088	32,874	45,432	53,073	51,857	66,941
Fleet mine support equipment	20,036	22,260	28,073	37,503	40,084	42,588
Total OPN	41,124	55,134	73,505	90,576	91,941	109,529

By fiscal year 1988 we will have bought out the funded requirement of [deleted] mines.

The funding profile for the mobile mine will provide 895 mines.

The computerized version of the Quickstrike mine, which will provide the bulk of the inventory objective, is not sufficiently mature in design to provide a firm objective, however we are expecting to have approximately 80,000 Quickstrike mines eventually in the inventory. Procurement of the computerized version(s) will begin [deleted].

Senator **Cohen**. There is a plan for a new class of mine hunter ship called the MSH-1. Again I, would like to see the funding profile for the R. & D. associated with the ship and what the total is for this program.

What are the differences between the application of this ship compared to the larger one—that is, the MCM-1 ship?

Admiral **Trost**. The information will be provided.

[The information follows:]

MSH R. & D. FUNDING

The lead MSH Class MCMV is scheduled to be constructed with fiscal year 1984 SCN funding. Following is the RDT&E funding profile required for MSH design and MCM Combat System development, test and evaluation. It should be noted that in certain instances this funding profile also includes MCM Combat Systems being developed for installation on the MCM Class MCMV. Also, certain of these systems are to be backfitted on the MSH as part of a pre-planned product improvement program:

	Fiscal year			To complete
	1982	1983	1984	
PE 63564N, ship design	1.9	[1] 4.1	1.3	0.7
PE 63502N, surface MCM:				
Project S0260, Minehunt	12.0	15.7	14.9	56.7
Project S1233, MCM Impr.	9.4	9.6	7.9	25.0
Project S1404, neutralization	10.2	6.0	1.4	4.7

[1] Ship design will be funded with SCN in fiscal year 1983 and out years.

MSH EMPLOYMENT

The MSH-1 will be employed in a coastal role, performing hunting, sweeping and neutralization operations from harbors and harbor entrances [deleted]. Unlike the high mix MCM-1, it will not be designed for extended deployment or as a deep water mine countermeasures platform.

Senator **Cohen**. Senator Quayle, do you have a question?

Senator **Quayle**. Go ahead.

Senator **Cohen**. When the Navy restructured, the sub and surface ship weapons were combined into one single program. Of course, this is designed to save money, but it is going to have an effect on the IOC date. The current submarine ASW long-range weapon is the SUBROC. That is a supersonic missile with a nuclear depth charge for a warhead.

My understanding again is that this weapon is being phased out in order to put a Tomahawk capability on our more modern attack subs. This leaves some kind of a gap as far as a capability to meet the ASW mission requirements, because you are not going to get the kind you need.

How much would it cost to put a new guidance system in and retain the weapon on board our SSNs until you get a replacement weapon?

Admiral **Trost**. The problems with SUBROC are age of the rocket motors themselves and the end of their useful life. The phase-out simply reflects the loss of that weapon as a primary threat weapon but from inventory in the inventory and not a total loss since a number of ships will continue to have that capability.

It will in fact, be phased out in certain submarines as the Tomahawk capability is brought in.

Senator COHEN. What is the projected IOC date for the improved weapons?

Admiral TROST. I will have to provide that for the record because we are still trying to pin down exactly what our program will be and the way which we will go with those weapons.

[The information follows:]

SUBROC REPLACEMENT

The projected IOC for the improved ASW weapon as it is now defined is [deleted].

Senator COHEN. You indicated in your written testimony we would have that article before April 1. We will need it a little sooner than that, since we have an earlier deadline. If you could get it to us as soon as possible it would be very helpful.

Admiral TROST. Yes.

Senator QUAYLE. I wonder if you discussed the article that appeared in the Washington Post this morning which is sort of a follow-up to the leaked story about the $750-billion funding gap that appeared a couple of months ago, and which has all sorts of different testimony?

Some said the $750 billion was nothing and dismissed it after a few seconds, and others said it was really a very serious point, and still others said, "Well, there is no war at this time and in peacetime there are all sorts of confusing data."

I would like you to try to clarify this for me. Are we really underfunded for the next 5 years, as this article certainly indicates we are?

I am asking you since you are quoted here.

Admiral TROST. Since I am quoted, I took the opportunity to read it closely and I read the article with great interest. The article purports to report what happened in a session of the Senate Armed Services Manpower and Personnel Subcommittee and the questions specifically were those of Senator Nunn and I would like for the record to note the portion of that article that is accurate is the portion that bears quotes when I am quoted as saying "Yes" in response to a question, and yes, sir, the transcript shows that that question received my response as "Yes."

When that article alludes to other things I said, it is taken somewhat out of context and let me see if I can clarify what was asked and what was said.

There was a considerable dialogue instigated by Senator Nunn, specifically and principally with Dr. Ikle, about the input of JCS requirements to the process for defense programing and planning.

The question which arose was: "What are the force levels which are reflected in the joint strategic planning document which is a classified input from the Joint Chiefs of Staff to the Secretary of Defense?"

That input reflects the judgment of the Joint Chiefs and their assistants as to forces which are, I believe referred to as a precedent force to provide reasonable assurance of success in meeting the task.

I am not a joint planner so I don't know all of the ways these things are put together or what is done with them. But those forces are and have been generally somewhat greater forces than those which are generally considered affordable within currently allocated dollar low.

They are also greater than those which are listed as the minimum essential goals which the Navy seeks at the present time and for the foreseeable future. So the question raised was: Are those forces greater than the current goals, and the answer is "Yes." Are they a goal at the present time in service program planning; they are not.

Senator QUAYLE. Let us try to get it in a little bit different range. You say that the goals that you talk about, which is beyond the 15-carrier task force, may be necessary, but not affordable?

Admiral TROST. The current military force goals for the Navy center around the 15 carrier battle group force structure to which I testified earlier. The force goals as I understand them, contained in the joint strategic planning document are somewhat higher than that, and they reflect what I suppose every military man would like—those forces which give him an assurance of being able to do that which he is tasked with reasonable assurance of success, and they are at a higher level.

Senator QUAYLE. They are at a higher level and they are predicated upon the Joint Chiefs of Staff's strategic planning guide; is that correct?

Admiral TROST. That is right.

Senator QUAYLE. And in that document you have in your possession you said that a 15-carrier task force would be inadequate.

Now, then——

Admiral TROST. No; I haven't said that.

Senator QUAYLE. You haven't said it?

Admiral TROST. And I won't say that.

Now what the newspaper said that I did——

Senator QUAYLE. But you said, if you had what you thought was necessary to carry out the contents of this document as you interpreted the document, the force would be above the 15-carrier level?

Admiral TROST. To be very accurate, what I stated was that that document contains force levels above those which are the current minimum essential goal to which I, CNO and the Secretary of Defense have testified as being the current goals of the Navy.

Senator QUAYLE. The document goes beyond the current goals?

Admiral TROST. The document, as I understand it, and I haven't seen that document, contains force levels higher than the current program goals for all military forces.

Senator QUAYLE. Let me back up.

In your response to Senator Nunn, you were alluding to a scenario that goes beyond the 15-carrier task force.

Now, how are you getting there and what are you basing your thinking on?

Admiral TROST. I didn't make those statements.

I made the statement to Senator Nunn that the levels in that document, when he said "Are those levels higher than the goals you have testified to," and I said "Yes, they are."

Senator QUAYLE. The levels in the document?

Admiral **Trost**. They are higher, that is a fact.

Senator **Quayle**. Well now, where do we get those levels from in the document? Can you explain that to us?

Admiral **Trost**. I can tell you, generally I can't tell you specifically who or how they were put together. In the joint process, the Joint Chiefs of Staff solicit inputs from their CINC's worldwide who come to conclusions that, given the national strategy and the existing threat, there is a military force level which if achieved would give them reasonable assurance of success in carrying out assigned task within postulated wartime stategies.

That level force is higher than the program force level which is generally considered to be a fully affordable force, achievable in terms of funding and time constraints.

Senator **Quayle**. So you can't tell us what the strategy it is that would get us beyond the 15-carrier task force requirement, to provide reasonable assurance of success?

Admiral **Trost**. I am not sure I understand the question. The difference between the two force levels is simply a measureable risk difference in being able to do what one is tasked to do.

Senator **Cohen**. Is it safe to say the budget you have supported is the minimum level to carry out the task as you see it, and that the document that is referred to would go beyond that because it would contain a wish list of every service saying, "This is what we really think we ought to have to meet every conceivable or reasonable threat. To survive and to win under those circumstances, we have to go well beyond what the minimum is"?

Admiral **Trost**. That is correct, except the statement isn't a service list. It is the joint service and CINC judgment as to what they need.

Senator **Cohen**. This is like saying this is what we would like to have, but we can't afford it. You feel that you can support this budget as carrying out the minimum level. There are risks in any minimum level funding, and we as a Congress apparently decided to take those risks?

Admiral **Trost**. That is correct.

Senator **Cohen**. It is a political judgment, as opposed to a military judgment. The military judgment which prevailed would be that they want more. The Joint Chiefs are saying:

> Well, if we look at it from a purely military point of view, we would need much more. But, from a realistic point of view and balancing the social programs and the interest rates and the deficits, we think we can carry out our mission at the minimum levels stated herein.

Now, we are taking a risk in passing that, but it is a risk that balances the realities of political life and economic life. Is that correct?

Admiral **Trost**. That is correct, and I wish I had stated it so clearly.

Mr. **Sawyer**. You articulated it very clearly. I wonder if the general military staff advising Caesar or whomever in history, had ever got everything that they would have liked to have had, to have reasonable assurance of victory.

Senator **Quayle**. If you follow that reasoning, what kind of risks are we taking?

You are indicating to me that there are significant risks that we are going to have to take because the strategy that we would like to implement is something that we can't have fulfilled.

Everyone says we are underfunded in defense and we would be further underfunded because of some of the political realities that the chairman of the subcommittee has pointed out, and so what are these risks?

There is obviously a huge gap in there on the so-called good strategy, an amount of money that we would like to have and now we are getting down to the minimal necessities, and with the political involvement we are going to be at a lower level.

What are these risks and don't you think we ought to be telling the American people of these risks that the chairman of the subcommittee alluded to?

Admiral TROST. I think you are asking me to step into a realm that is not mine to enter. Those questions could probably be more clearly adressed by the members of the Joint Chiefs and by the CINC's, their testimony.

Senator QUAYLE. When we ask the Joint Chiefs, they say it was prepared down the line, that people below them came up with this wish list and it therefore really isn't their responsibility. And when we get to the Secretary of Defense he will say that that is the military and Joint Chiefs and so we keep getting this ball kicked back and forth. All we are really trying to come to grips with is what strategy we are operating under.

This is a fundamental question that hasn't been answered. What risk do we take by only having a 15-carrier task force as compared to a higher force level?

I have heard that the so-called wish list goes as high as a 24-carrier task force. We are not going to 24 carriers but are only taking 15, and therefore what kind of risks are we going to incur?

Admiral TROST. I can pursue this and give you my personal judgment, if you like. I just returned from a 2-year tour in command of 7th Fleet and I did have a very capable force. I did not have enough forces to do everything at once and I didn't have anywhere near as much as I would have liked, but if you heard from me you would probably have heard me say that I had an overall force level that gave me assurance of being able to do that which I had been tasked to do. As a Congressman, you might have told me that more forces requested was a wish list that you couldn't support for the reasons that Senator Cohen just mentioned.

What you get from the Joint Chiefs and their CINC's when they put together their list of requirements, is a listing of "Here is what it would take under the foreseeable threat to do all of the kinds of things that we might get involved in, and specifically to defeat the global threat in a global conflict."

When you opt for a lesser force and if you are told by these gentlemen that they have a lesser level which involves a certain amount of risk—but it is a level which they can support—it tells you that they are willing to accept a higher risk if we are forced into conflict.

Senator QUAYLE. As we face this global threat and a must case scenario strategy, it would require much higher force levels than we are going to have. It seems to me that with the political realities not only of this year, but also the outyears as the economy worsens, we are going to have to redefine our basic strategy. We can redefine our strategy on what the global threat is and what we expect from our allies. The chairman of the subcommittee has been very outspoken on this, and I have also spoken on this issue.

It seems we have gotten ourselves into a real box here, where we have a strategy that we are going to be able to respond globally to every war and every area at any time. And to pay for that kind of strategy is simply not even thinkable. It just simply isn't going to happen.

So we sit around and talk about this enviable strategy and the resources to back it up. But it appears to me at this juncture that we are heading in the wrong direction.

What we are going to have to do is redefine a strategy and develop wish lists based on a limited amount of resources.

Now, if you are looking at a limited amount of resources, is it feasible to redefine a strategy, and is it feasible to get more cooperation from our allies around the world to face the threat that we now see? Is what I am saying totally unrealistic?

Admiral TROST. I think it is something that you as the Congress and the administration have to wrestle with. If there is to be a redefinition of a national strategy, that is a political issue that must be addressed.

Senator QUAYLE. I think we do have to address it, and I would comment to those on this committee, as we start looking at the strategy, that we are going to have to come to grips with it and redefine it.

Obviously what is going on in the military now in planning for the future, is quite alarming, at least to this Member of the Senate.

Senator COHEN. I think Senator Byrd was here the other day and we talked about that. We are talking about the need to declassify a lot of information. There are things that are presented to us in closed session that we can't talk about, and then we are supposed to go back to our constituents and say there is a threat out there, and I can't tell you, all you have to do is trust me that the Soviets are building five attack submarines, or one every 5 weeks. That is about the rate?

Mr. SAWYER. Currently, yes.

Senator COHEN. And we are building one or two a year if we are lucky?

Mr. SAWYER. We are doing better than that. As you know, we delivered seven attack submarines last year, but that was rather a unique year. Our current rate is about two a year based on the last 5 years.

Going forward, I would say we can cover three or four a year as an operating rate.

Senator COHEN. You are being outnumbered at least 2 to 1 on that kind of a program?

Mr. SAWYER. Yes.

Senator COHEN. The fact of the matter is, if you look at the nature of the threat, we have been neutralized as far as the nuclear advantage. We are outnumbered on a conventional scale, and if you look at the shipbuilding program of the Soviets compared to ours, there is a gap between what our capability is and what the threat is.

All we can do is talk about it in generalities without getting into specifics. But I think Senator Quayle raises a fundamental issue that here we are and we are going to have to get by with only the minimum standard and there are risks involved.

I think it has always been a problem with the demgogueries that people are unwilling to discipline themselves, compared to a dictatorial situation which doesn't need the consent of the U.S. Senate or to ask the people whether they will agree. They agree or they will be disciplined and reprogramed or whatever it takes.

So that is the real challenge of any democratic society and it has been over the years and history hasn't been very kind. The history of demogogueries is that they live very short, happy lives.

Mr. SAWYER. That is exactly right.

Senator COHEN. So the real question is whether this country has a capacity to bring the facts to its people and whether the people in turn will respond by saying "We need more and we are not doing enough to protect our vital freedoms and liberties."

Mr. SAWYER. I think Senator Quayle was out of the room when I made my remarks about comparing our present program with that in the midsixties, because I do think that is relevant with regard to what level this Nation deemed acceptable in the past, at least, and not during a war period.

In the midsixties, Senator Quayle, the Department of the Navy budget represented about 12 percent of the Federal budget. Our current request for the fiscal year represents about 11 percent of the Federal budget. In the procurement accounts in the midsixties, about 7½ percent of the Federal budget was devoted to naval procurement, and our request in 1983, as large as it is, that is $38 billion total, represents about 7 percent.

So that is the level and as Admiral Trost has indicated, this program does meet the objectives, the minimum feasibility objectives, we have set forth in terms of the national strategy. So we think it is an affordable program.

Senator BYRD. May I make an observation and see whether it is reasonably correct?

As I understand it, the proposal or the plan of the administration has been to spend some trillion dollars-plus over a period of 5 years. That it is the belief of the administration that by spending that amount that this Nation will be in a position at the end of that period with reasonable assurance to protect itself and do whatever needs to be done under any reasonable plan that the enemy might have to attack this country.

So recognizing that, it is not going to give you 100 percent protection, but with this plan put forward by the administration the Nation can reasonably expect to get from it a defense that while there is no guarantee it will be total, will be within reasonable bounds and acceptable risk.

Is that about the way you gentlemen see it or not?

Mr. SAWYER. Yes; you have said it very well.

Senator BYRD. Does the admiral concur with that?

Admiral TROST. I concur.

Senator **Quayle**. I had one other thing to followup on the chairman's comments about declassification.

What did you say the Soviets versus the United States ratio was for attack submarines production?

Mr. **Sawyer**. We can give you those for the record. It is a large number. They outbuild us on the basis of 3 to 1 on all major counts.

Admiral **Trost**. During recent years they have been building 10 to 12 submarines per year as opposed to our 2 or 3.

Senator **Quayle**. Now there are some reports that the Soviets are moving toward acquiring large carriers.

Can you compare the Soviet carriers with ours and give us some information on that and what they are doing?

Admiral **Trost**. I think it is too early to do that other than to note that there is evidence of their constructing the first of their large conventional carriers to handle conventional takeoff and landing aircraft.

Senator **Quayle**. How big a carrier is this?

Admiral **Trost**. I can't tell you and I don't know if that information is available.

Senator **Cohen**. We have asked that in closed session and we have had briefings in terms of the information.

Senator **Quayle**. This goes to your point of declassification.

Senator **Cohen**. I don't want to declassify it here.

Senator **Quayle**. This just makes the point of what we are talking about. The Soviets know how many carriers and they know what they are doing. Why does this material have to be so secret?

If the Soviets are building something secret, and we finally released some information, I might be declassifying something. But if someone leaked it in the House, or if Mr. Weinberger leaked it at a Washington Post editorial board meeting that would be different. I don't understand it, and as the chairman has said, why can't he and Senator Byrd tell their constituents that there is a threat out there, and why can't we tell them how many carriers the Soviets are going to have.

One of the debates in this session of Congress is going to be whether the United States is going to have new large carriers or new small carriers. I would imagine that it might be relevant to some Senator's vote to know what the Soviet Union is going to do.

No, the DOD says this is classified and we can't talk about it except in executive session. Do you think all of the Senators and 435 over there in the House are going to get briefed?

I have made my point. This is a serious point to me.

Mr. **Paisley**. Let me give you a point on it.

I think the point you are discussing is that when you get a briefing on classified subjects, often the nature of the briefing is to tell you something that is known and why it is known? That is why they put the total briefing together. I think you should explore the differentiation between the total data and the information you desire, and say, as an example, is it possible that we can talk about what we believe to be the number of carriers and their size, at an unclassified level?

It is not the Soviet of our knowledge that is important in this context, but what the facts are, which you would be able to give to your constituents. I would like to to be able to do it. When you get these briefings and see a segment of information you would like to use, you should explore the degree to which that portion of it could be declassified to allow you to use it.

There is a subtle point there, but I think it is important, and if you have seen a briefing you will know what we are talking about.

Senator **Quayle**. We are talking about numbers and sizes, but we don't have to get into the source of the data. That is what everybody is worried about. We are not talking about the source if we talk about how big the Soviet carriers are.

Senator **Cohen**. Senator Quayle makes a valid point, frankly. As we look at the escalated costs of weapons systems, we have been faced with the dilemma that we are getting less and less and it is costing us more and more. The nature of the threat is not increasing, but is growing. You look around the globe and see what is happening in the Red Sea, the Persian Gulf, the Horn of Africa, the Mediterranean, and Caribbean, and all of these areas are becoming increasingly dangerous as a result of the adversary's implacable buildup.

So the question becomes, will we continue to try to do all of these things on our own. Frankly, gentlemen, I don't think the Europeans are going to do much more than they are doing right now. They are not going to extend NATO beyond its geographical boundaries. You might have Great Britain or France doing things here and there, but beyond that it is unlikely that you are going to get much assistance from our allies.

Given the nature of the growing threat, and given the fact that we will produce fewer and fewer systems at higher and higher costs, it gives us only one of two options. We are going to continue to have a thin line or what the Chief of Staff of the Army called a hollow Army, or a hollow Navy, or a hollow Marine Corps because they are stretched so thinly, or we are going to have to redefine what courses are of paramount interest to us and put our resources there.

That might be dictated in the future by foreign policy decisions. For example, Western Europe is intent upon reducing its exposure in the Persian Gulf by buying Soviet gas. To the extent the United States can decrease its dependence and the Europeans decide they don't want to have an increased dependence on Persian Gulf oil and go to the Soviet Union, that might dictate what kind of policy or strategy we will have in the Persian Gulf. That might very well alter our own commitment to the Persian Gulf.

After all, that commitment is there for the benefit of Japan more than the United States, and for the benefit of Germany more than the United States. If we see those countries pursuing other energy goals to reduce their dependence, we might decide we can't afford to project power in that region because the interest is not as great.

Southern Africa is coming under pressure from both sides. That will raise another problem as to whether or not we will have free access to the minerals and resources in that part of the world.

What Senator Quayle is saying should not be taken lightly. We may decide to cope with ever rising costs and an ever increasingly dangerous world. Maybe we cannot afford to spread ourselves as thinly as we are currently doing, in view of the fact that we cannot count on additional assistance from our allies. That is not just a defense policy view. It is a combination, essentially a combination of defense and foreign policies.

Senator BYRD. I have just one question.

You have stated, Admiral, that there is considerable building in Naval Reserve ships. This is a major change in policy, is it not?

My question is: What is the reason for this major change during the past year?

Admiral TROST. It is recognition of the very considerable contribution we can expect from our Reserve Forces, and also acknowledgement of the fact that many of their material assets have been permitted to age beyond reasonable mobilization capability.

Recognizing that need, the decision was made to provide them with current force structure capabilities, compatable with the operating forces, to be able to do the job the Naval Reserve Forces are designed to do.

Senator BYRD. From the standpoint of cost, how much cheaper is it to keep a ship in the Reserve than in the Active Navy? That is including consideration of personnel in operation and maintenance and in comparison with the 1052 and the FFG-7?

Admiral TROST. For the FF-1052 class I have seen an estimate that it will cost approximately 75 percent of the dollar amount to maintain it as a Naval Reserve ship. It is still, as you know, manned by 50 percent active crew and it still has to be maintained to the same standards as the Active Navy yet the total personnel cost will be less, about 75 percent of the net cost.

For the FFG-7 I would estimate the cost would be about the same percentage as the FF-1052 frigates to maintain it as a Naval Reserve Force ship.

Senator BYRD. How much readiness, if any, would the ship lose in Reserve status?

Admiral TROST. That is difficult to assess. If you compared it precisely from a training standpoint; that is, a ship engaged on a day-to-day basis, the Active Force ship will probably have a higher readiness at any given time.

The Naval Reserve Force ship, on the other hand, can be brought up to that level of readiness in a relatively short period of time because those selected reservists know their job and it is a case of getting out and practicing their trade.

Senator BYRD. So there is some loss of readiness, but that could be recouped very quickly?

Admiral TROST. Yes.

Senator COHEN. I would like to close the meeting by making reference to the so-called reform caucus here on the Hill, which has generated a good deal of controversy on both sides.

The basis for the reform group is that they are trying to come to grips with the question Senator Quayle has been raising, are we spending more and more and getting less and less in an increasingly dangerous world? Is simply adding another $10 or $15 billion to the budget each year going to give us that measure of protection that is necessary in view of the nature of the threat we are facing, or are there other alternatives given the fact that perhaps we should be building smaller or faster or smarter weapons?

I know the reform group was dismissed by many members of the Pentagon as saying they want us to go back to the bow and arrow and simplistic systems in a very complex military world. But essentially this group is trying to determine whether or not we are living a life of illusion, and whether we are continuing to do things today and for the future which will either be obsolescent or simply militarily insignificant by the year 2000.

What are we doing to cope with the trends? Is it simply what we have been doing in view of a different type of threat? These are important questions that are going on.

It is not something that we profess to have the answers to. We are not military experts. We have a little more expertise than the average Member, but we are not military experts. We do have an obligation to raise these questions and find out whether or not we are pursuing a strategy which will be for the most part outmoded by the year 2000, given the trend lines by an adversary and given the trend lines by their supporters as well.

I think it is a very valid question of the strategy and how it is related, and whether or not we are simply deluding ourselves that by adding this amount of money it will give us that much protection or whether the trends are so bad or so adverse that we ought to be shaking the American people and ourselves into awareness and determining how much we spend on what kind of ships in the future.

Should we be putting more money into LCACs for Marines? I have seen some impressive ships put out by the Soviets on that. They are ahead of us in their capability. I think this is a healthy dialog, to start examining these questions, because frankly we are faced with going back to our constituents as I go back to the State of Maine, and say "But we have to do more for defense because you are not secure."

They don't believe it. They think there are an awful lot of ways that you can cut $30 or $40 billion without noticing the difference.

I think, Mr. Paisley, you would agree with that. Here are a few million dollars and like the old saying, "Eventually it adds up to a lot of money." There is a suspicion that the money is not being spent well and also there is a suspicion that we are overstating the case, the nature of the threat, and we don't have to spend this amount of money.

I would disagree with that. I think based on what I have seen we are doing just the minimum and the minimum is not going to be good enough over the long haul. Yet the political realities are there. We have structured our society in such a way that we have become dependent upon social programs which are not easily altered or indeed eliminated.

So I see it as more in addition to being a defense or military problem, I see it as more a philosophical one as well. How do you deal in a free society. Do you alert your people to the kind of priorities they have to associate with the preservation of their liberties, and do so in a way in which they can believe it, and secondly support it?

I think this is a healthy discussion we are having this morning. Senator Quayle, did you want to comment?

Senator **Quayle**. I wholeheartedly agree with my chairman that this kind of dialog has to continue.

Do you know what the debate is going to be on the floor? It will be the debate on the carrier and probably the Trident II, and a couple of other big ticket items.

As far as the Navy is concerned that will be the debate on the floor. What we really need to do is to have a better communications with the Pentagon and other people as a whole. We are not experts. We don't have time to spend. Our 18 hours a day aren't all spent on Armed Services.

I was up to the Budget Committee talking about agriculture before I came down here, but what he is talking about is something that is percolating right here on this Armed Services Committee. It is not just the two of us bringing this up. There are a lot of others on both sides of the aisle.

I did have one quick question handed to me about a statement Mr. Paisley made earlier and I will try to quote it. "We sure would like Congress help in canceling some programs," and, "we have too many programs".

Mr. **Paisley**. That is correct.

Senator **Quayle**. Could you tell us what programs you would like to eliminate?

Mr. **Paisley**. Well, I am going to, because I am going to try again this Spring to cancel some more.

Senator **Quayle**. Do you have a hit list?

Mr. **Paisley**. I have 40 that I am going to bring forward to explain how and why we canceled them. We are going to do some more. We have too many programs and we are spreading the money across too many programs. We should put more money in fewer programs.

That is a fact but I can't find anybody that will agree with me on that point. Maybe you, I am not sure.

Senator **Quayle**. I think that I might be going down this path with you, if you are saying we have too many programs.

Mr. **Paisley**. And it is very difficult to kill programs.

Senator **Quayle**. This is the point that is important.

Mr. **Paisley**. We need support. When I identify a program, we develop a rationale for canceling the program, and I need the Congress support if they agree with it. I am new in this process and every time I try to do something I find somebody pops up from under the table and they say "This is his program" and I think I am old enough to have a couple of my own.

Senator **Quayle**. When you start this process of eliminating programs, where is your biggest trouble spot? Is it within the Congress that someone is for it, or is it some contractor?

Mr. **Paisley**. It is all over.

Senator **Quayle**. It is all over?

Mr. **Paisley**. One program will be a problem with my own office, the next program will be a problem with the Marine Corps, and the next is with some contractor, and the next is some Congressman, because of his constituency.

Senator **Quayle**. Some programs don't get eliminated?

Mr. **Paisley**. That is right, but the problem is——

Senator COHEN. "It is hard to drain the swamp when you are up to your hips in alligators", is that what you are saying?

Mr. PAISLEY. Yes.

Senator QUAYLE. Don't pick on too many in Indiana, but I will certainly go down the road with you.

Mr. PAISLEY. We will call you when you are not working on this farm issue.

Senator COHEN. Gentlemen, on behalf of the committee let me commend you.

Mr. Paisley, I have come to respect you in the past year, and the initiatives you have taken. I think you are doing a good job, and I welcome your service over there.

I think we can look forward to other types of initiatives under Secretary Weinberger and Frank Carlucci.

I think we are doing a good job in trying to get a handle on an almost impossible situation.

We would like to have responses within 5 working days, if possible, and with that I will have the committee staff contact you and you can work with them on any specific issues.

[The questions submitted by the Senate Armed Services Subcommittee on Sea Power and Force Projection follows:]

QUESTIONS SUBMITTED BY SENATOR WILLIAM S. COHEN

VERTICAL LAUNCH SYSTEM ASROC

Senator COHEN. As our surface ships are equipped with a vertical launching system in the future, the Antisubmarine Rocket (ASROC) Antisubmarine Warfare (ASW) weapon system will be removed. The long range plan is to use the Common ASW Standoff Weapon as a replacement for ASROC. But in the short run, we will be removing a very important ASW capability from the fleet.

The Navy killed the VLS ASROC program on the basis that the costs were too high. What is the reason for the cost growth?

Admiral TROST. The Navy merged the Vertical Launch System (VLS) ASROC with the submarine ASW Stand-off Weapon Program in October of last year in order to streamline Research and Development (R&D) efforts, not as a result of cost growth. [Deleted.]

Senator COHEN. How reliable are your estimates and what exactly are they based on?

Admiral TROST. Cost estimates for the VLS ASROC program are Class E computer estimates and are reliable within ±25 percent based on technical and programmatic aspects as they are now defined. Those estimates are derived from parametric relationships statistically developed from historical costs of components such as rocket motors, autopilots, and airframes and associated production and logistical support.

MARITIME CAPABILITIES

Senator COHEN. Sometime in the past, former Secretary Brown was quoted as having said, "When we build, they build; when we stop, they keep building."

Now that we are again building, do you think that a 600-ship Navy as you have described will be adequate to regain maritime superiority in the light of the Soviet building trends we were shown last Friday?

Admiral TROST. Any measure of our maritime capability must be viewed in relation to our most likely and dangerous adversary, the Soviet Union. In time to conflict, U.S. and allied forces must be capable of meeting the threat head-on where necessary, reinforcing our forward-based forces, and threatening enemy forces and capabilities in widely divergent areas. The capabilities we must have to accomplish these tasks are strongly influenced by the trends in Soviet naval force development. Given the Soviet fleet today, we face a military capability that threatens our forward strategy because we do not, with confidence, have sufficient force levels to place the Soviet maritime capabilities at risk. Maritime superiority is not matching the Soviets ship-for-ship, sailor-for-sailor. It is having the confidence that those maritime tasks essential to our security can be accomplished successfully.

If the Soviets do not do anything significantly different from what we project today, I believe that execution of our five year building and aircraft procurement plans as we submitted them to the Congress will put us well on the road to achieving the kind of maritime superiority we need.

The CNO most directly answered the question when he said, "I am now encouraged that I will be able to turn over to my successor a Navy that has a momentum, building towards a goal of 15 carrier battle groups, 4 battleships (which in themselves provide a unique opportunity to create flexible surface action groups) a force structure of 100 or more nuclear attack submarines, enhanced and modernized amphibious forces, a revitalized and modernized mine warfare force, a highly survivable TRIDENT I and TRIDENT II strategic missile force, and enhanced sealift capability which for the first time in decades will give us the ability to respond flexibly and promptly wherever necessary around the globe, and an effective maritime prepositioning force. Taken together, these programs, properly supported and maintained, should assure that my successor's successor will see the restoration of U.S. maritime superiority around the globe, regardless of Soviet achievements in the meantime."

FLEET BY SHIP TYPE: 1970–90

Senator **Cohen**. Mr Sawyer would provide for the record a year-by-year accounting of the fleet by ship type from 1970 to 1990?

Mr. **Sawyer**. The below tables reflect the requested information.

SHIP FORCES OF THE U.S. NAVY—BY CATEGORY, SHIP TYPE, AND FISCAL YEAR

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Strategic forces												
Ballistic missile submarines: SSBN	41	41	41	41	41	41	41	41	41	41	40	34
Material support ships: AS	5	5	5	5	5	5	5	5	5	5	5	4
Other auxiliaries:												
AK	1											
TAK	4	4	4	4	4	4	4	4	4	3	3	3
Battle forces												
Aircraft carriers (CTOL):												
CV	14	13	13	13	13	13	11	10	10	10	10	9
CVN	1	1	1	1	1	2	2	3	3	3	3	3
CVS	4	4	3	2								
Cruisers:												
CA	2	1	1	1	1							
CG	22	23	24	25	23	22	21	20	20	20	18	18
CGN	3	3	3	3	4	5	5	7	8	8	8	9
Destroyers:												
DD	122	103	93	71	32	32	31	25	30	36	43	43
DDG	37	38	38	37	37	38	38	39	37	37	37	39
Frigates:												
FF	36	47	57	58	58	58	58	58	58	58	59	59
FFG	6	6	6	6	6	6	6	6	7	7	12	19
FFR	5	4	3	3								
Attack submarines:												
SS	59	50	38	24	12	11	10	10	9	7	5	5
SSN	46	51	56	60	61	64	64	67	71	73	74	82
Patrol ship:												
PG	15	17	16	14	14	14	8	6	2	2	2	
PHM								1	1	1	1	1
Amphibious helo/landing craft carriers:												
LHA							1	1	3	4	5	5
LPD	12	14	15	14	14	14	14	14	14	14	14	13
LPH	7	7	7	7	7	7	7	7	7	7	7	7
Landing craft carriers:												
LKA	12	7	6	6	6	6	5	5	5	5	2	1
LPA	4	3	3	2	2	2						
LSD	13	12	12	13	13	13	13	13	13	13	13	13
LST	46	30	30	21	20	20	20	20	20	20	20	18

SHIP FORCES OF THE U.S. NAVY—BY CATEGORY, SHIP TYPE, AND FISCAL YEAR—Continued

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Miscellaneous amphibious warfare ships:												
LCC	2	4	3	2	2	2	2	2	2	2	2	2
LPSS	1	1	1	1	1							
Minesweepers:												
MSC	7											
MSO	56	42	31	11	9	3	3	3	3	3	3	3
Mine countermeasures ships: MCS	1											
Underway replenishment ships:												
AE	18	14	15	16	13	13	13	13	13	13	11	10
TAE												1
AF	6	5	4	3	3	2	1					
TAF					1	1	1	1	1	1	1	1
AFS	6	7	7	7	7	7	7	7	7	7	7	7
AO	31	25	24	23	16	11	9	8	7	6	3	5
TAO			1	1	3	5	7	8	9	10	13	13
AOE	4	4	4	4	4	4	4	4	4	4	4	4
AOR	3	4	5	5	6	6	6	7	7	7	7	7
Support forces												
Material support ships:												
AD	14	11	11	11	11	9	9	9	9	9	9	9
AR	7	7	5	5	5	5	5	5	4	4	4	4
AS	6	6	6	6	6	6	6	6	6	6	7	9
Fleet support ships:												
ARS	13	13	12	12	12	12	12	12	9	7	6	6
ASR	8	8	8	7	8	8	8	6	6	6	6	6
ATA	13	12										
ATF	28	28	25	23	20	17	16	12	2	1		
TATF					2	4	4	4	4	5	6	7
ATS		1	2	3	3	3	3	3	3	3	3	3
Mobilization forces category A												
Destrcyers: DD								1	1	1	1	1
Fregates:												
FF	5	4	4	4								
FFR	1											
Auxiliary submarines: SSAG	2	2	2	1	1	1	1	1		1		
Patrol ships: PCER	1											
Landing craft carriers:												
LKA							1	1	1	1	3	4
LPA							2	2	2	1		
LST												2
Underway replenishment ships: AE											2	2

SHIP FORCES OF THE U.S. NAVY—BY CATEGORY AND SHIP TYPE

(Based on Jan. 9, 1982 DNFYP)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Strategic forces										
Ballistic missile submarines: SSBN	34	33								
Material support ship: AS	4	4								
Other auxiliaries: TAK	3	2								
Battle forces										
Aircraft carriers (CTOL):										
CV	9	9								
CVN	3	4								
Battleship: BB										
Cruisers:										
CG	18	18								
CGN	9	9								

SHIP FORCES OF THE U.S. NAVY—BY CATEGORY AND SHIP TYPE—Continued

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Destroyers:										
DD	43	43								
DDG	39	41								
Frigates:										
FF	59	55								
FFG	19	27								
Attack submarines:										
SS	5	5								
SSN	82	91								
Patrol ships: PHM	1	6								
Amphibious helo/landing craft carriers:										
LHA	5	5								
LHD										
LPD	13	13								
LPH	7	7								
Landing craft carriers:										
LKA	1	1								
LSD	13	13								
LST	18	18								
Miscellaneous amphibious warfare ships:										
LCC	2	2								
Minesweepers: MSO	3	3								
Mine countermeasures ships:										
MCM										
MSH										
Underway replenishment ships:										
AE	10	12								
TAE	1	1								
TAF	1	1								
AFS	7	7								
TAFS		2								
AO	5	6								
TAO	13	11								
AOE	4	4								
AOR	7	7								
Support forces										
Material support ships:										
AD	9	8								
AR	4	4								
AS	9	8								
Fleet support ships:										
ARS	6	6								
ASR	6	6								
TATF	7	7								
ATS	3	3								
Other auxiliaries:										
AGOS										
TAGOS										
TAK		1								
Mobilization forces category A										
Destroyers: DD	1	1								
Frigates:										
FF		4								
FFG										
Landing craft carriers:										
LKA	4	4								
LST	2	2								
Mine countermeasure ships: MCM										
Underway replenishment ships: AE										

Note: Figures for fiscal year 1983–90 have been deleted.

SHIP ADDITIONS AND RETIREMENTS: 1970–90

Senator COHEN. Would you provide for the record, a year-by-year accounting from 1970 to 1990 by ship type of which ships retire and which ships are added?

Mr. SAWYER. The two tables following reflect the requested information:

3690

U.S. NAVY SHIP FORCE LEVEL GAINS FROM NEW CONSTRUCTION, FISCAL YEARS 1970–1990 [2]

Ship type [1]	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
CVN						1		1					1								
CG/CGN					1	1		2	1			1									
DD/DDG							2	5	9	7	7	2	2								
FF/FFG	10	11	10	8	4	2			1		5	7	8								
SSBN													2								
SSN	7	5	5	4	1	3	1	3	4	2	1	4	6								
LCC		2																			
LHA							1		2	1	1										
LHD																					
LKA	3																				
LPD	3	2	1																		
LPH	1																				
LSD		2	1	1																	
LST	6	5	7	1																	
PG/PHM	8	2						1					5								
MCM/MSH																					
AE		2	2	2																	
AFS		1																			
AO/TAO												2	2								
AOE	1																				
AOR	2	1	1		1	1															
AD											1	1	1								
AS	1		1							1	1	1									
Other auxiliaries		1	1	2	1					1		3									
Total	42	34	29	18	8	8	4	12	17	12	16	21	27								

---

[1] Includes only those ships that have been or will be retired to inactive ship facilities, stricken from the naval vessel register or made a part of the security assistance program.

[2] Projected retirements and deliveries are based on the Jan. 9, 1982, update to the Department of the Navy 5-year plan.

Note: Figures for fiscal years 1983–90 have been deleted.

COUNTING THE NUMBERS OF SHIPS

Senator COHEN. Please document any changes you have made in your ship accounting rules between this Administration and the last.

Mr. SAWYER. Before specifically addressing the Navy's bookkeeping system on ships and how that book count relates to the 600-ship Navy, I want to stipulate some definitions to keep the discussion in historical perspective. The chart graphically depicts definition changes during the past six years.

Prior to 1976, ship count was traditionally based on an active fleet count only. At that time the Administration decided that, in addition to the active fleet, ships of the Naval Reserve Force and MSC-manned Naval Fleet would be included in a ship count titled: Ship Operating Forces. Such ship totals included, for example, the "floating warehouses" of the near-term prepositioning ship force at Diego Garcia. As important as these 13 ships are, they are not warfighting entities but rather represent an important strategic mobility capability.

During the 1980 presidential campaign, and as embodied in the "Sense of Congress Amendment" of the fiscal year 1982 Defense Appropriations Act, reference to the 600-ship Navy was in the traditional context of active ships. While I do not believe the "ship operating forces" method of counting ships most recently in use accurately portrayed the strength of the U.S. Navy, neither do I believe we can ignore the real contribution to our warfighting capability and excellent material condition of certain of our Naval Reserve Force (NRF) and of direct support MSC-manned ships. Thus, while we have not included the old NRF FRAM I destroyers we do include the relatively modern NRF FF-1052 KNOX class frigates; we likewise do not count NRF MSO ships but will count the replacement NRF MCM ships to be built during the coming five year period. We do not count Norton Sound (AVM-1), nor Dolphin (AGSS-555), nor Lexington (AVT-16), for these ships have no true warfighting potential.

The current ship count methodology categorizes ships according to their potential contribution to the Navy's warfighting and support missions as listed below:

Total battle forces	[deleted]
Strategic Forces	[deleted]
Battle Forces	[deleted]
Support Forces	[deleted]
Major Mobilization Force A	[deleted]

Designation of ships in the above categories does not depend on Active Fleet, Naval Reserve Force (NRF), or Naval Fleet Auxiliary Force (NFAF) status but on deployability and combat capability. In addition to the above ships, there are also U.S. Navy ships which do not directly contribute to deployable warfighting capability, frequently are in poor material condition, and which are not counted when assessing the war-fighting strength of a navy capable of covering the three ocean responsibilities of the U.S. Navy in peace or in wartime operations. They do provide important indirect support and sustainability capabilities in peacetime and in wartime. They are called:

Local defense and miscellaneous support forces	[deleted]
Auxiliaries and Sealift	[deleted]
Major Mobilization Force B	[deleted]

With the exception of the inclusion of NTPS/MPS/TAH ships, the sum of the Total Battle Forces and the Local Defense and Miscellaneous Support Forces equates to the ship operating forces. By the end of fiscal year 1982, Navy will have 514 ships in the Total Battle Forces category and 56 ships in the Local Defense and Miscellaneous Support Forces category. The present five year shipbuilding plan will yield 600 Total Battle Forces ships by the end of fiscal year 1989, if fully funded. The term "deployable", as used in describing U.S. Navy forces, relates to three elements of U.S. national military strategy: deterrence, flexible response, and forward strategy. The national goal established for the Navy is that of regaining maritime [deleted] fifteen carrier battle groups, or 600 deployable ships, is the minimum required if we are to say with confidence that we have regained this superiority. Maritime [deleted] entails forces necessary to support U.S. interests overseas and counter an expanding Soviet maritime power. To this end, U.S. Naval forces offer mobility unfettered by foreign political considerations, self-sustainability, versatility, and controllability with highly relevant, sophisticated offensive capabilities, on a worldwide basis. The strategic component of maritime [deleted] includes survivable weapons, with long range and accuracy, coupled with two way command and control. The conventional component of maritime superiority supports the forward strategy regardless of the threat capability, with the ability to destroy naval forces at-sea or to project power ashore. All of our ships, however, are not capable of contributing to maritime [deleted] due to their mission, condition, or some other important consideration as described earlier and we do not count them as "deployable." Prior counting methods were simply inventories of various ships, in different categories, irrespective of their contributions to maritime superiority.

EXPECTED SERVICE LIVES FOR SHIPS

Senator Cohen. What are the expected service lives you are using for each type of ship and the exceptions to these expectations?

Mr. Sawyer. The following Expected Service Lives (ESL) are standard planning estimates. All ESLs are shown in years from initial ship delivery.

FBM subs:	
SSBN	25
Trident	30
Attack subs:	
SS/AGS	25
SSN (594 and earlier)	25
SSN (637 and later)	30
SSN (SSBN conv.)	25
Carriers:	
CV	30
CVN	30
CV (SLEP)	45
Cruisers:	
CG	30
CGN	30
Destroyers:	
DD 931/945	30
DD 963	30
DDG 37	30
DDG 2	30
DDG 2 (mod.)	35
DDG-51	30
Auxiliaries:	
AD	30
AG	35
AGDS	35
AGF	30
AGOS	25
AK	30
AR	30
ARC	30
Frigates:	
FF	30
FFG	30
Patrol: PHM	20
Amphibs:	
LCC	30
LHA	30
LPH	30
LKA	30
LPD	30
LSD	30
LST	30
Mine:	
MSO	25
MCM	25
URG:	
AE	30
AF	30
AFS	30
AO	30
AOE	30
AOR	30
ARS	30
AS	30
ASR	30
ATF	30
ATS	30
ATU	30
AVM	35
AVT	35

In all cases of units delivered or transferred to the MSC or NRF, five years are to be added to the active force ESL to obtain the MSC or NAF Expected Service Life. Extension of ESL due to modernization, conversion or rehabilitation: In cases of a ship or class planned to undergo a major modernization, conversion or rehabilitation (such as the CV SLEP program), the ESL may be extended up to 15 years dependent on the ship material condition and the extent of hull and machinery upgrade.

LENGTHS OF TIME FOR SHIP PROCUREMENTS

Senator COHEN. What is the length of time normally planned between ship procurement and delivery, by ship type?

Mr. SAWYER. The following table depicts this information:

Ship construction times for planning funding year to delivery time (years) [1]

Category and ship type:	
Carriers CVN	8
Cruisers:	
CGN	5
CG-47	[2] 5/4
Destroyers: DDG-51	5/4
Frigates: FFG-7	[2] 4
Submarines:	
SSBN (Trident)	6
SSN (688s)	6
Patrol: PHM	3
Amphibious:	
LHA	5
LSD-41	4/3
Mine warfare: MCM	3
UNREP:	
AO	4/3
TAO	3
Auxiliaries:	
AD	5/4
TAGOS	3
TARC	3
AS	5/4
TATF	3
ARS	3

[1] 2 digits separated by a shilling indicate lead ship and follow ship construction times.

[2] Follow ships can take up to 5 years to deliver depending on the quantity of ships procured in a single year.

Senator COHEN. I assume that if you reach your 600-ships goal by 1990 that you do it within the current five year plan. If so, how much are you spending on SCN for each of the years of the plan?

Mr. SAWYER. The following table displays Total Obligational Authority and Outlays for the Shipbuilding and Conversion, Navy (SCN) appropriation for fiscal year 1983–fiscal year 1987.

	Shipbuilding (SCN)	
	TOA	Outlays [1]
1983	18,648.3	6,925.0
1984	12,455.7	8,155.3
1985	16,752.6	9,072.3
1986	20,391.8	10,601.0
1987	28,074.6	13,169.8

[1] Includes outlays from prior year programs.

Senator COHEN. I notice also that while SCN reaches over 21 percent of TOA in fiscal year 1983 and fiscal year 1987 that it never exceeds the just over 12 percent of

DON outlays. However, if the Iranian trust fund year is excluded, SCN as a percent of DON outlays grows from about nine percent in 1974 to almost 12 percent in 1987.

Over that time frame, and especially in the last five years, what is happening in the other accounts? Some of them must be going down on a percentage basis. What is in each account, as a percent of DON outlays and DONTOA, over the same period, and what is the magnitude of each account in absolute terms over the same period?

Mr. SAWYER. The following table displays Total Obligational Authority (TOA) and Outlays for Military Personnel (MilPers), Operations & Maintenance (O&M), Shipbuilding (SCN), Procurement, Research & Development (R&D), and Military Construction (MILCON). Percent of total Department of Navy (DON) TOA and Outlays for each year is also shown. Pay raise amounts for fiscal years 1982–84 are not included.

Outyear estimates for MilPers, O&MN, R&D, MILCON, and total DON TOA data is not authorized for release by the Secretary of Defense.

	TOA	Percent DON	Outlays	Percent DON
Military personnel:[1]				
1974	7,501.9	27.9	7,337.0	30.6
1975	7,833.4	28.0	7,882.6	28.8
1976	8,039.5	25.6	7,899.3	27.8
1977	8,278.1	22.7	8,182.0	26.6
1978	8,743.8	22.1	8,688.7	25.9
1979	9,192.2	22.0	9,117.2	24.1
1980	9,948.1	21.1	9,837.8	23.0
1981	12,012.6	20.9	11,951.2	23.7
1982	12,578.0	18.5	12,492.4	22.4
1983	14,662.2	16.7	14,533.7	21.8
1984	15,084.5	17.2	15,038.9	20.0
O. & M.:[2]				
1974	7,205.3	26.8	6,510.9	27.1
1975	7,988.8	28.7	8,043.5	29.4
1976	9,118.6	29.1	8,712.0	30.6
1977	10,577.1	29.0	9,895.0	32.2
1978	12,018.7	30.4	11,266.3	33.6
1979	13,038.9	31.2	12,302.0	32.5
1980	16,319.3	34.7	15,569.3	36.5
1981	19,453.1	33.9	18,418.2	36.5
1982	21,404.1	31.5	20,366.7	36.5
1983	24,349.0	27.7	23,258.3	34.9
1984	24,859.7	28.3	24,415.2	32.4
Shipbuilding (SCN):				
1974	3,501.8	13.0	2,104.4	8.8
1975	3,105.5	11.1	2,626.5	9.6
1976	3,855.4	12.3	2,606.1	9.2
1977	5,722.9	15.7	2,840.5	9.2
1978	5,725.5	14.5	3,047.6	9.1
1979	5,072.6	12.2	4,553.5	12.0
1980	6,464.4	13.7	4,221.8	9.9
1981	7,617.0	13.3	5,217.7	10.3
1982	8,902.3	13.1	5,414.3	9.7
1983	18,648.3	21.2	6,295.0	9.4
1984	12,455.7	14.2	8,155.3	10.8
1985	16,752.6		9,072.3	
1986	20,391.8		10,601.0	
1987	28,074.6		13,168.6	
Procurement (excluding SCN):[3]				
1974	5,328.2	19.8	4,922.2	20.5
1975	5,303.5	19.0	5,430.3	19.8
1976	6,221.6	19.8	5,425.4	19.1
1977	7,444.9	20.4	5,643.8	18.3
1978	8,372.5	21.2	6,149.5	18.3
1979	9,183.9	22.0	7,243.3	19.2
1980	9,185.4	19.5	8,172.4	19.1

	TOA	Percent DON	Outlays	Percent DON
1981	12,528.3	21.8	9,567.2	19.0
1982	17,763.1	26.1	11,236.7	20.2
1983	21,754.8	24.7	14,848.3	22.3
1984	25,078.8	28.6	18,827.4	25.0
1985	30,716.9		22,838.9	
1986	33,902.9		27,129.5	
1987	36,825.7		30,683.9	
R.D.T. & E.:				
1974	2,704.5	10.0	2,623.4	10.9
1975	3,051.6	10.9	3,021.0	11.0
1976	3,314.3	10.6	3,214.9	11.3
1977	3,797.0	10.4	3,480.5	11.3
1978	4,054.3	10.3	3,824.9	11.4
1979	4,456.2	10.7	3,826.4	10.1
1980	4,563.3	9.7	4,381.5	10.3
1981	5,024.9	8.7	4,782.9	9.5
1982	5,807.1	8.5	5,411.6	9.7
1983	6,232.3	7.1	5,947.1	8.9
1984	7,746.5	8.8	6,961.5	9.2
Milcon:				
1974	692.3	2.6	413.7	1.7
1975	611.4	2.2	516.5	1.9
1976	680.6	2.2	674.5	2.4
1977	613.4	1.7	691.9	2.2
1978	557.6	1.4	634.0	1.9
1979	791.9	1.9	759.7	2.0
1980	603.4	1.3	804.6	1.9
1981	827.3	1.4	647.6	1.3
1982	1,487.4	2.2	715.7	1.3
1983	1,233.5	1.4	1,055.4	1.6
1984	1,644.3	1.9	1,220.0	1.6

[1] Military personnel data includes the MPN, MPMC, RPN, and RPMC appropriations.
[2] O&M data includes the O&MN, O&MMC, O&MNR, and O&MMCR appropriations.
[3] Procurement data includes the APN, WPN, OPN, and PMC appropriations.

DEPARTMENT OF NAVY TOTALS

	TOA	Outlays
1974	26,934.0	23,983.8
1975	27,962.4	27,393.1
1976	31,325.6	28,462.2
1977	36,471.7	30,774.6
1978	39,504.3	33,523.6
1979	41,735.8	37,813.0
1980	47,083.8	42,709.6
1981	57,467.5	50,485.1
1982	67,964.8	55,724.7
1983	88,022.3	66,634.9
1984	87,801.6	75,270.7

Senator COHEN. Please justify what is happening to each account in substance, especially those that are shrinking as percentages.

Mr. SAWYER. Department of Defense policy precludes the release of projected outyear DON dollar totals since these amounts are tentative and have not been approved by the President. Therefore, it is not possible to comment on what is happening to all accounts over that period. However, as indicated by answers to previous questions, it is apparent that for the period fiscal year 1974–fiscal year 1984, the proportion allocated to Procurement has increased most significantly while that applied to Military Personnel and Research and Development has decreased. This trend is not necessarily indicative of priorities, rather it reflects the need to rebuild the Department of Navy's force structure. It is emphasized that this increase in the investment category is not being accomplished at the expense of manning levels, training, or readiness, which is largely provided by the military personnel and operating accounts. It should be noted that, in recent years, all accounts have experienced real program growth and they will continue to grow in the outyears.

Senator COHEN. Is the budget increasing sufficiently to allow large growth in some accounts while maintaining only slight, but steady and sufficient growth in the others?

Mr. SAWYER. Yes, current funding allocated to Department of Navy accounts is considered an optimum balance of priorities within available resources.

SEA POWER

Senator COHEN. Mr. Sawyer, one of the reasons we attach such great importance to sea power is because we must have the ability to move cargo and supplies across the oceans. We have important economic and military requirements for this capability.

But the strongest Navy in the world is not going to be enough if we don't also have the sealift ships which will actually carry the equipment and the supplies.

In your statement, you said the "U.S. Navy minimum force" required a "strategic sealift to support overall U.S. Military capabilities."

And the Congressionally-mandated Mobility Study completed last year describes the need for civilian ships to resupply forces overseas.

Is the Navy concerned about the enormous shortage of U.S. civilian sealift ships?

Secretary SAWYER. Yes, the Navy is concerned about the shortage of U.S. civilian sealift ships.

Senator COHEN. What is the Navy doing to push for a solution to this shortage?

Secretary SAWYER. In developing its sealift program to meet total lift requirements, Navy is looking to the prepositioning ships and the Ready Reserve Force to provide the initial sealift necessary to respond immediately to any contingency. Follow-on sealift requirements would be filled from the requisitioning of U.S. controlled and effective U.S. controlled merchant fleet.

Senator COHEN. Does the Navy expect the Congress to provide funds for ALL the "strategic sealift" ships which are needed to support any forces overseas?

Secretary SAWYER. Navy does not expect Congress to provide funds for all the "strategic sealift" ships which are needed, but rather counts on our active merchant fleet. Navy is requesting funding for only the prepositioning ships and those ship programs such as the RRF and TAKRX that provide the surge capability to respond in a timely manner when needed.

Senator COHEN. Mr. Sawyer, last year you broached the idea of convert-and-charter as a way to achieve certain efficiencies in the acquisition of our maritime pre-positioning fleet.

When will we be advised of the details of your plans? We were promised these months ago, and those who have oversight of the O&MN account are very anxious about the large charter costs they are seeing in fical year 1983 and fiscal year 1984.

As soon as possible provide a detailed explanation of this program, including a side-by-side cost comparison with normal procurement and also including all non-quantitative advantages and disadvantages.

Secretary SAWYER. The Navy still believes that chartering ships for the TAKX program is the most economical means of achieving the necessary lift capability in the required time frame. When the twenty to twenty-five year stream of charter payments are discounted and viewed at their present value, it makes good business sense. The Request for Proposal invited contractors to propose either the conversion and lease of existing ships or the construction and lease of new ships, with an option to purchase at fair market value. Initial cost proposals received to date indicate that our earlier estimates of charter costs are attainable. While I prefer to be more specific and provide a side-by-side cost comparison of procurement versus charter, it is not possible until all proposals are evaluated. Until that time all cost proposals are proprietary in nature.

Our review to date suggests that the convert and charter program approach to the TAKX will improve the chances for a successful program, because it broadens the number of potential candidates from existing U.S. flag ships to a much broader segment of the world-wide inventory. The many responses to the RFP provide a clear indication of feasibility. For once we are telling industry what it is we want done—and not how to do it. We are relying on the private sector for proposals that are imaginative both in terms of ship design and financial management. From the financial perspective, we are confident a charter program can be constructed which will have a lower present value than the purchase option. Thus, all the conditions necessary for a successful program are evident. Since the proposed acquisition strategy uses the traditional services of the U.S. flag maritime industry, it will serve to strengthen this important industry in consonance with this administration's policy objectives.

SHIP MODERNIZATION

Senator Cohen. Admiral Trost, last week the Director of Naval Intelligence described a variety of anti-ship weapons which the Soviets have. It seems that they are continuing to develop new weapons, but if we fail to modernize the combat systems on board older ships, especially the anti-air warfare systems, then we will have a serious weakness. What is the Navy's overall plan for modernizing its ships?

Admiral Trost. Ship modernization plans are predicated upon current and projected threats. These threats are assessed and a determination is made as to what military capability improvements are necessary to counter the threat. These findings are then translated into the RDT&E and Defense Systems Acquisition Review Council (DSARC) (for major acquisitions) process by the initiation of an Operational Requirement (OR) by the warfare sponsor. If the resultant RDT&E program is successful, a Proposed Military Improvement (PMI) is prepared which initiates the first step in the development of a ship alteration. PMI's may also come from other sources (Fleet, Vendor, SYSCOM, etc.) and need not always be the result to a RDT&E program. The warfare sponsor monitors these programs and is responsible for timely introduction of its products to the fleet. Installation by SHIPALT retrofit is the logical follow-on provided the ship class in question has significant service life remaining and the gain is commensurate with the cost. In this connection, each annual budget submission is tempered by affordability, impact of Congressional budgeting actions, OSD guidance, and manpower constraints. Examples of equipments/systems developed to meet the AAW threat which are currently being installed or programmed to be installed in the near future are as follows: SM2 Missile; 48C ATD 3D Radar; 49 ATD 2D Radar.

Senator Cohen. How do you schedule the modernization of surface ships and submarines?

Admiral Trost. Surface ship and submarine modernization is scheduled to coincide with the delivery of the specific hardware from individual vendors and the overhaul schedule of specific ships. Care is taken to assure availability of shipyard mandays to install a given alteration in consonance with the overhaul plans for the ship or submarine.

Senator Cohen. Our most important escort ships for our carriers are the cruisers, and they have important anti-air warfare mission assignments. What are the Navy's plans for each of the existing carriers?

Admiral Trost. The New Threat Upgrade modernization is programmed for the 9 ships of the CG-16 class, the 9 ships of the CG-26 class and all 9 of our existing nuclear cruisers. Installation will be accomplished during regular ship overhauls [deleted].

The New Threat Upgrade program will provide these ships with a capability to engage the most modern Soviet air launched cruise missiles. This improvement is achieved through increased sensor performance in a jamming environment, decreased system reaction time and a more capable surface to air missile, the SM-2 Block II.

Senator Cohen. What is the average duration of overhaul for each of our major ship classes? What is the length of time between overhauls?

Admiral Trost. Overhaul duration is different for each class of ship and is a function of the size and complexity of the ship. The table below lists average overhaul durations and intervals for each major class of ship.

Ship class	Months	
	ROH duration	ROH interval
CV	12	54–60
CV (N)	15–18	84
Cruiser	9	54–60
Cruiser (N)	15–18	72–78
Destroyers	9	54–60
Frigates	8.5	42
Amphibious	9	48–54

Ship class	Months	
	ROH duration	ROH interval
Tenders	8	74
Ammunition	10	48–54
Fleet oiler (new)	TBD	96
Combat stores ship	4	54–60
Attack submarines	14–19	70–84
Ballistic missile submarines	20–22	72–144

Senator COHEN. What changes are expected in the future?

Admiral TROST. Quality of overhauls will continue to improve, and the interval between overhauls will increase, as the Navy phases in the Engineered Operation Cycle (EOC) concept. The FFG–7 class, in support of the progressive overhaul concept, [deleted]. A major depot level modernization would be included every ten years.

The Reliability Centered Maintenance (RCM) concept, borrowed from commercial airlines, is being tested on surface ships. It will improve the availability of ships to the fleet by insuring that only critical maintenace is required during overhauls. We are also continuing to expand the use of Port Engineers as we move closer to merchant marine maintenance philosophies in our support ship overhaul programs.

PROCUREMENT OF TWO TRIDENT SUBMARINES

Senator COHEN. Mr. Sawyer, the shipbuilding budget is significantly larger this year than it was last year, and this support for the Navy is certainly needed. For fiscal year 1983, the SCN request is $18.6 billion, and $2.2 billion is for procurement of two Trident submarines. Why are two Trident submarines being requested?

Mr. SAWYER. The 97th Congress deferred the fiscal year 1982 Trident Shipbuilding request based on uncertainties at Electric Boat. However, additional advanced procurement funding ($100M) was added to assure that when the program is ready to go forward construction can begin without delay.

Based on the fact that Congress deferred the fiscal year 1982 Trident ship but provided advanced procurement funds for the tenth and eleventh Trident submarines, the fiscal year 1983 request includes full funding for the fiscal year 1982 submarine as well as the one previously programmed for fiscal year 1983. This action is in accordance with the President's Strategic Modernization Program announced in October 1981 and the desire of Congress to assure no delivery delays in the Trident submarine program.

FUNDING ONLY ONE TRIDENT

Senator COHEN. What will be the impact if funding is provided for only one of these ships in fiscal year 1983?

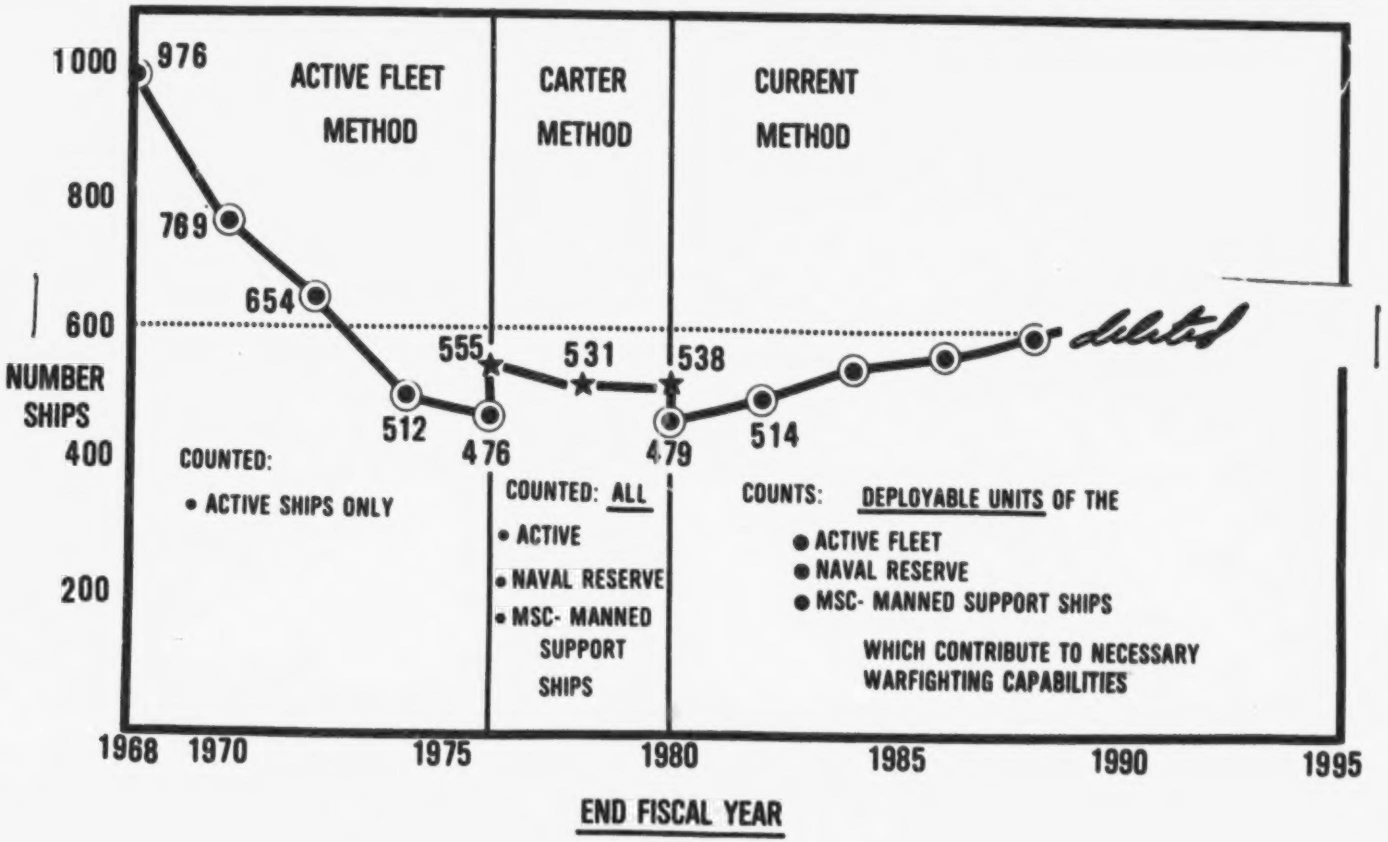
Mr. SAWYER. Construction problems that caused earlier delays in delivery dates and precipitated the congressional action last year in deferring the ship have largely been resolved. Additionally, the contract which was awarded for the fiscal year 1981 ship contains firm priced options for two ships in fiscal year 1983. If only one ship is authorized, a new contract would be required for the deleted ship when it is authorized in fiscal year 1984. This would be subject to new negotiations on cost and schedule with any impacts of a procurement break being factored in. The cost savings realized by quantity buy at priced options versus new negotiations are significant. The end cost of the second fiscal year 1983 ship would be approximately $340 million more if procured as a single ship in 1984. In addition, the loss of jobs both at the shipyard and in related industries would increase unemployment. And finally, delay of one SSN would tend to reinforce the argument that the instability of the Navy shipbuilding program is one of the major cost driving factors in the shipbuilding industry. The U.S. has stated its commitment to have defense second to none; a move at this time to delete or defer one of the Trident submarines in the fiscal year 1983 request could be taken by the Soviets and the rest of the world as lack of resolve to ensure the maintenance of a credible, invulnerable, up to date strategic force, particularly in view of the age of our present systems and the undefined prospects for rapid development of other new systems.

U.S. NAVY SHIP RETIREMENTS FISCAL YEARS 1970–1990[1] [2]

Ship type	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
CV/CVS	4	1	1	1	2		2	1													
CA/CG/CLG	3	1			2	2		1			3										
DD/DDG/DL	28	24	7	22	33	5	5	11	9	5	8	7	4								
FF/FFR	6	3	1	7	11	2															
CC	2																				
SSAG																					
SSBN												2									
SS/SSN	5	9	12	15	12	1	2		2	1	3										
LCC	3		1	1																	
LFR	4																				
LKA	7	5	1								1										
LPA	9	1		1						1	1										
LPH	3																				
LPR	5																				
LPSS	1																				
LSD	14	3	1																		
LST	23	18	7	8	1																
PCE/PCER/PG	1	6	1	2				5	2			2									
MCS/MSC/MSO	4	17	13	12	1		9														
AE	3	6	1	1	3																
AF/TAF	4	1	1	1			1	1													
AO/TAO	5	6			5	3							3								
AD	1	2				2					1	1	2								
AR	2	1	2						1												
AS	1		1								1		1								
Other auxiliaries	36	11	25	11	1	3	4	5	14	3	4	2									
Total	174	115	75	82	71	18	23	24	28	10	22	14	10								

3694

NAVY FLEET SHIP COUNT



SSN-688 IN PLACE OF TRIDENT

Senator Cohen. How would that be affected if an SSN-688 were added in place of the Trident, given that there already is sufficient long-lead in fiscal year 1982 as a result of congressional actions? Please provide a manpower impact analysis in both Newport News and Electric Boat for both a two Trident/two SSN and a one Trident/three SSN alternative, as well as all advantages and disadvantages of each in financial and military terms.

Mr. Sawyer. The manpower impact of alternative building programs at Newport News Shipbuilding and at Electric Boat would be a function of the distribution of the ship contract awards. Because Electric Boat is our only SSBN shipbuilder and because we do not plan to second source this class of ships, the SSBNs would be awarded to that contractor under either the one SSBN or two SSBN option. SSN awards, on the other hand, would be competitive and would be based upon consideration of a number of factors, including available manpower at each facility. Assuming that these factors would weigh the decision toward award of an (additional) SSN building contract to EB if one SSBN were cancelled, it is estimated that the net impact on manning of the Electric Boat facility would be relatively small. Under that assumption there would be no impact at Newport News.

Regarding program costs, the one SSBN, three SSN option would require $740 million less in fiscal year 1983 total obligational authority than does the budgeted two SSBN, two SSN plan, as shown below.

[In millions of dollars]

	Fiscal year 1983 budget submission		Fiscal year 1983 alternative mix	
	2-SSBN	2-SSN	1-SSBN	3-SSN
End cost	2,768	1,197	1,416	1,824
Less prior advanced procurement	−527	−169	−283	−262
Full funding	2,241	1,028	1,133	1,562
Plus follow ship advanced procurement	+244	+416	0	+504
Total obligational authority	2,485	1,444	1,133	2,066

Total obligational authority—difference

	Millions
2-SSBN/2-SSN	$3,939
1-SSBN/3-SSN	3,199
Difference	740

There can be no military assessment of a trade off comparison between having an additional attack submarine in lieu of the requested second Trident SSBN. Failure to fund the second Trident would reduce the number of Trident submarines in the force by one, thereby reducing and delaying the overall strategic force effectiveness. On the other hand, an additional SSN would help in reaching the Navy's near term goal of 100 multipurpose SSNs sooner. There is a military requirement for both.

THIRD SSN

Senator Cohen. If a third SSN is added to the budget request, how much money should be added to this line item?

Mr. Sawyer. A third SSN in fiscal year 1983 would require $622 million of additional funding.

[In millions of dollars]

	Fiscal year 1983		Change
	2-ship budget submission	3-ship estimate	
Quantity/end cost	1,197	1,824	
Less prior year advanced procurement	−169	−262	
Full funding	1,028	1,562	
Plus follow ship advanced procurement	+416	+504	
TOA required in fiscal year 1983	1,444	2,066	622

FFG-7

Senator **Cohen**. Mr. Sawyer, the five-year shipbuilding plan calls for construction of guided missile frigates in every year. In fact, the construction rate is supposed to climb from two up to three per year in fiscal years 1986 and 1987.

How much would have to be added if a third FFG-7 were procured?

Mr. **Sawyer**. Based on an end cost of $666.4M for two ships in fiscal year 1983, it is estimated that an additional $309.5M would have to be added to procure a third FFG in fiscal year 1983. This estimate assumes a two-shipyard program.

Senator **Cohen**. If only two are procured, will they be contracted out to the low bidder, or will they be assigned for industrial base reasons?

Mr. **Sawyer**. The fiscal year 1981 request for proposals stated that "the award (or awards) of the FFG-7 Class ships will be made to that offeror (or those offerors) whose proposal (or proposals) will provide timely delivery of a combination of ships which satisfy the Government's overall FFG-7 Class ship requirements, and will be based upon the most advantageous offer (or offers) to the Government, price and other factors considered. One such factor which may be considered is an award pattern which will promote the interest of national defense or the interest of industrial mobilization, or both, in accordance with 10 U.S.C. 2304(a)(16)". Because the fiscal year 1982 and fiscal year 1983 ships are options in the fiscal year 1981 contract, their award will be made on the same basis. In previous years (prior to fiscal year 1982), due to the number of ships required for delivery on a yearly basis and in the interest of national defense and industrial mobilization, it was necessary to maintain three shipyards in the FFG-7 Class program. Because of the reduced number of FFG-7 Class ships contemplated for procurement over the next five years, it is no longer considered necessary, or cost effective, to maintain three shipyards in the program. Accordingly, the three fiscal year 1982 ships were awarded to two shipyards in a manner that assures an East and West Coast production capability is maintained on a cost effective basis in the interest of national defense and mobilization. It is expected that the award of the two fiscal year 1983 ships will be based on a similar rationale. However, the award decision will depend upon analysis of the overall needs of the Navy and industrial mobilization at the time of the award (planned for April 1983).

SHIP CONFORM

Senator **Cohen**. Mr. Paisley. As you stated, the Ship Concept Formulation Program in fiscal year 1983 is excepted to develop 20–25 design alternatives for ships for 10–12 separate mission areas. This program used to be known as Advanced Ship Development. Fiscal year 1982 funding for this was $9.9 million. In fiscal year 1984 it is expected to be $26.8 million.

Please provide a detailed break-out of how this money is going to be spent.

Please provide additional justification for this program.

Mr. **Paisley**. The nature of the program element has not changed. In the formative development of the fiscal year 1983 budget, we were going to ask that Preliminary Design be shifted from RDT&E, where it is presently done, to SCN. We decided not to do that, but prematurely we changed the name of the program element from Advanced Ship Development to Ship Concept Formulation. We plan to change it back to Advanced Ship Development.

The breakdown of the funds planned for fiscal year 1983 are as follows:

Subproject:	*Requirement (millions)*
DDG-51 preliminary design (complete)	$4.0
LPDX preliminary design (continue)	3.0
New concepts	.8
Analytic techniques	.8
Computer supported design	2.2
Surface ship conform	5.0
Extended planning annex ships	3.0
Total	18.8

Preliminary designs of ships in the Shipbuilding Plan continue to be accomplished in this element. This level of design translates a ship concept into a design that can be described in terms of Top Level Specifications. The New Concepts are those emerging ship requirements that continually perturbate the planned budget. The Analytic Techniques are designs tools and practices that are developed to assist in general ship design. They provide a more rapid or thorough method to explore ship designs. Computer Supported Design exploits computer based technology to benefit all government-developed ship designs. The objectives are to reduce task execution time by about 50 percent, increase designer efficiency by 25 percent, obtain 90 percent accuracy the first time, and have greater design flexibility. Of the more than 200 computer programs developed, 137 are currently in the NAVSEA library. 64 percent of these are in constant use. There are 26 separate Computer Support Design projects currently in process, including ship synthesis models, Hull, Structure and Arrangements programs, Shipboard Electrical System Simulation, and Automated Test Development for Ship Design. Surface Ship Continuing Concept Formulation (CONFORM) is designed to explore ship concepts beyond the Extended Planning Annex. It is designed to identify the RDT&E necessary to support those concepts. This subproject will develop the 20-25 design alternatives for 10-12 separate mission areas. The Extended Planning Annex (EPA) Ships effort will develop feasibility studies for four ships in the EPA.

SSES

Senator COHEN. Mr. Paisley, the Ship Systems Engineering Standards program, which was once called SEAMOD, is a program which is supposed to introduce increased use of modular design into our ships, with the goal of reducing the cost of modernization and saving money. Fiscal year 1982 funding for this program is $9.8 million, but I notice that only $1.7 million is requested for fiscal year 1983.

What is the future of this program?

What has SSES accomplished in the past?

Mr. PAISLEY. The Navy's interest in and dedication to the Variable Payload Ship concept remains unchanged. It appears to make good sense. The methodology being developed to achieve a Variable Payload Ship is the Ship Systems Engineering Standards (SSES) program. This develops standards for the control of the interface that should allow for the decoupling and concurrent development of the ship platform and payload. The future of this program remains constant. Our expectations have not changed. During this calendar year the first concrete products—the design criteria for variable payload ships, and the standards for various ship zones and modules—are scheduled for completion. We are dedicated to adopting as many of these standards in our new DDG-51 Class ships as prudent. We have already incorporated the standards as they exist today for the weapons modules as we proceed into Preliminary Design for the DDG-51. It is planned to initiate the design standards for other than Destroyer size ships. The principal effort during this current calendar year will be the evaluation of the standards developed. We are still adhering to the principles that when the standards are incorporated into a ship program, that program may require additional funding to reduce any element of risk associated with incorporating the standard, or uncertainties in modified construction or testing techniques developed. As a result of about a two and one-half year effort thus far in the SSES program, we are in the process of confirming our intuitive feel that a variable payload ship would be larger (greater tonnage) than one designed to our current systems-engineering custom-design approach.

The life cycle costing model has been recently completed and is being analyzed. The Zone (ship functional capacities) and Module (configuration description of ship and payload interface) Standards are due for completion March 1982 through June 1983. These products will be evaluated and decisions will be made regarding specific application and recommendations for further standards development.

Congress added $8.0 million in fiscal year 1982 to the budget request of $1.98 million. These funds are being used to develop models and mock-ups for standards; to continue design of the mid-size combatant to assess standards and support zone and module standards; and to initiate variable payload design for the DDG-51. The budget request of $1.75 million for fiscal year 1983 is that required to continue the orderly development and assessment of standards for generic ship design.

NON-NUCLEAR PROPULSION

Senator COHEN. Mr. Paisley, I notice that the Navy has requested $9.7 million for a new line item for non-nuclear propulsion called "electric drive." I am happy to see the Navy established this account, because it is an item with considerable Committee interest. I notice, however, that in the area of exploratory development, there is $53 million for nuclear propulsion technology and zero for exploratory development into any other kind of propulsion.

Why isn't Navy putting any money into exploratory development for improved non-nuclear propulsion?

Mr. PAISLEY. The Navy does have an exploratory development program for non-nuclear propulsion technology. This program is under Program Element 62543N, Ships, Submarines, and Boats. The funding level is $8.1M for fiscal year 1982 and $6.3M for fiscal year 1983. In addition, the Navy is funding numerous non-nuclear propulsion efforts in Advanced Development (RDT&E Category 6.3) and Engineering Development (RDT&E Category 6.4), the "electric drive" program being one of these efforts. The funding level for this non-nuclear propulsion work in Categories 6.3 and 6.4 is $39M in fiscal year 1982 and $63M in fiscal year 1983.

IMPROVED BATTERY

Senator COHEN. Mr. Paisley, I understand that it may be possible to build an improved diesel-electric submarine if additional funding is provided for exploratory development for a rechargeable lithium battery.

Is this correct, and if so, how much money is needed in order to start this research? Why didn't Navy request funds for this?

What will be the safety requirements for rechargeable lithium batteries and how will these differ from the safety requirements for existing lithium batteries?

Mr. PAISLEY. In the area of rechargeable lithium battery we have investigated the small cell electrolyte and other concepts under basic research (6.1) program. It is to be transitioned to exploratory development (6.2) in fiscal year 1984 to develop two batteries, 20-ampere-hour first and then 500-ampere-hour. Funding requested is as follows: $500K for fiscal year 1984, $450K fiscal year 1985, and $400K, fiscal year 1986. Eventually it will be transitioned to advanced development (6.3).

As you can see, the development of rechargeable lithium battery technology is still in the basic research stage. At this point, I am not able to answer your question as to how much additional funding is required. We are conducting a new diesel-electric submarine study in which the battery problem will be given a closer look. It is expected that when the study is completed in August 1982, we will be in a better position to answer your questions on R&D required as well as safety requirements.

MINEHUNTER

Senator COHEN. Admiral Trost, there are plans for a new class of minehunter ship, called the MSH-1. What is the funding profile for all R&D associated with this ship and what does it total?

Admiral TROST. The MSH-1 design is still being determined with the final decision expected to be made in the mid-April timeframe. Accordingly, R&D costs will be a function of the amount of MCM ship system technology that can be transferred to MSH-1.

Senator COHEN. How do the projected procurement and life cycle costs of this ship compare with costs of the larger MCM-1?

Admiral TROST. Because the basic design of the MSH-1 has not been finalized, firm projections on procurement and life cycle costs are still to be determined. The MSH is envisioned to be the low-mix ship of the mine countermeasures force. Every effort is being made to maximize commonality with the MCM ship in the area of training, NEC qualifications, and combat systems with concommitant supply support, thus keeping procurement, life cycle, and other related costs to a minimum. These costs will be substantially below those of the MCM.

Senator COHEN. What are the differences in the missions of these two ships?

Admiral **Trost**. The MSH-1 will be designed for coastal mine-hunting concentrating on clearance of harbors and coastal waters [deleted]. It will work in combination with the MCM and AMCM helicopters, but will concentrate on areas in which it would be impractical to use the MCM. This will free the MCM to deploy if and when required to clear deep ocean chokepoints and vital sea lanes of communication.

ADVANCED ELECTRONICS

Senator **Cohen**. Mr. Paisley, the Navy has an R&D program called "Very Large Scale Integrated Architecture" which is intended to produce an improved computer chip. Do you intend for the results of this research to be widely adopted by private corporations?

If so, how are you going to prevent the transfer of this technology into Soviet weapons programs?

Mr. **Paisley**. We believe the R&D program you are referring to is the USDRE managed Tri-Service R&D program called "Very High Speed Integrated Circuits" or VHSIC, which is intended to produce a new generation of integrated circuits (IC's) which will increase signal processing speeds by two orders of magnitude.

The VHSIC program was undertaken to provide IC's capable of providing higher processing speeds, radiation hardening and built-in on-chip testing needed for military applications. These characteristics are not needed for commercial applications and consequently were not being developed. The commercial need is generally for greater density. It is not expected that there will be a commercial demand for chips of the type developed for military applications.

Congress, in authorizing the VHSIC program, placed it under certain strict controls in an effort to slow the rate of transfer of this new IC technology to our potential adversaries. These controls consist of the International Traffic in Arms Regulations (ITAR). Additionally, the Export Administration Regulation (EAR) will be used where appropriate. It is the Program Office's intent, within the guidelines established by the Congress, to protect our national interests while allowing the maximum degree of industrial and academic freedom. This will be carried out by designating VHSIC technologies to be "controlled" or "not controlled". Basically, defense and dual-use end products will be controlled as will be the technology for their development and manufacturing.

R. & D. ITEMS REDUCED

Senator **Cohen**. Mr. Paisley, you mention in your statement that over the past six months you have cancelled about 40 programs.

Please list each program that was cancelled. Also list the amount of money that was deleted, where the funds were moved, whether or not a reprogramming action was initiated, whether the Congress was notified, the justification for the cancellation, what other system fills the cancelled system's mission, and whether the requirement remains unfilled.

Mr. **Paisley**. Senator Cohen, I will give you a general answer to some parts of your question and provide the rest on a program by program basis. First, the 40 programs addressed in my statement were cancelled at various stages during the course of the Development of the Fiscal Year 1983 Program and Budget for Navy R&D. We are not talking about funds already approved but funds recommended for inclusion in what was then a developing Budget. Thus there was no question of reprogramming existing funds. Secondly, as this was a program and budget development, funds associated with programs terminated were not moved to other programs on a one for one or even a one for two type of action. All terminations contributed to the effort to reduce our overall total to stay within guidance or budgetary constraints. Similarly, it must be said that, in general, the programs in question were cancelled because they were of a lower priority than those funded in the budget; were assessed to present technical risks which were too high; required a cost profile which was not affordable when weighed with the performance improvement and/or need being satisfied; or cancellation was based on guidance received from higher authority including Congress.

In general, Congress was not notified concerning the majority of these cancellations. However, several of the programs, such as CAML, MDM, FFX, and I²R Harpoon, had been the subject of considerable discussions between the Navy and Congress during the fiscal year 1982 budget development and approval, and others such as Seafire were also discussed with the Congress.

In general, other systems were not identified to fill the objective(s) of the cancelled program. For example, CAML was to develop an additional mine laying capability; mine laying will continue to be accomplished with the exisiting assets such as

A-6, A-7, P3, and B-52 aircraft. The I^2R Harpoon role, however, is to be satisfied by Tomahawk II (MRASM) and VLA-role was to be integrated into the Common ASW SOW System (although the reestablishment of two separate programs is now under consideration). Future plans for the mission objective of LRAAM/AIM-54D and Thor will be assessed in fiscal year 1983. Other plans for satisfying the objectives of cancelled programs are provided in the attached list, if available.

The basic requirements for programs cancelled do not remain unsatisfied. As noted, many of the programs were system improvements, systems support, tools to enhance/expedite technology, or were new capabilities. The decisions which cancelled new capabilities or systems improvement programs were based on determining that these efforts could be deferred and we could rely on current systems longer or that the planned programs would not achieve the objective. A-6/AWSACS is an example of such a program, as it was concluded to be unaffordable, but action is being taken to explore other means to improve the capability of the A-6 aircraft. In mine warfare, there is a need to consider the next generation mine and the operational requirements for moored mines. The Medium Depth Mine (MDM) was not a program with an acceptable acquisition strategy and funding profile, but action is being taken to determine the near-term operational need for moored mines and a concept and timeframe for the next generation mine is underway. Thus, in general, the requirements for the cancelled programs have been transferred from the development phase to the planning phase. Such transfer is designed into the PPBS process in order to assure mission requirements are properly managed.

HULTEC vulnerability program	3.7
Navy integrated BETA support	1.0
Long haul communication architecture and integration	.3
Coordination in direct support (CIDS)	1.7
Integrated acoustic comm. med. data rate development	6.2
Supertorch IRCM	6.7
CAML	0
Guided munitions launch	3.5
ECM tubes	4.5
Adv surf sonar (6.3 line)	10.4
Integrated fire support coord (IFSC)	3.5
NOSS	85.5
NAVTOLAND	7.2
NAVPERS accessions systems	1.3
VLS ASROC (requirement to be satified by a common ASW standoff weapon. This decision is currently being reconsidered in Navy)	28.5
Dual mini-sins	2.6
Captor Seaside	1.7
Thor	21.7
Medium depth mine (MDM)	38.0
RECO	1.8
Buried minehunt	4.1
HYPAM	1.0
H-46 extended range fuel tanks	1.2
IIR Harpoon (Development terminated in favor of air-launched Tomahawk (MRASM). Decision followed congressional budgetary action in fiscal year 1982	38.7
RFX	16.6
DASS	1.4
A6/AWSACS	48.0
MADAIR	3.6
LR AAM/AIM 54D	
EMCARD	2.7
Maximum performance ejection seat	4.6
F/A-18 improvement	
Future communication system	.2
Computer adaptive test	1.4
AMRAAM OUE	6.0
SEAFIRE (Program terminated as a result of decision not to acquire 5" SAL GP	22.6
Weaponizing prototype	3.0
HYDRUS	1.0
HARM A/C integration	2.0
FFX (Terminated following fiscal year 1982 congressional budgetary action)	1.2

STANDARD MISSILE-3

Senator **Cohen**. Mr. Paisley, in your statement you mention a "consideration effort" being planned to define the SM-3, and you also talk in glowing terms of joint programs.

How considerable is "considerable" and under what program element will it take place?

Would this missile have any relation to the old LSRAM or SOJS that the Navy refused to pursue in a joint program with the U.S. Air Force? I believe that the Air Force Program is still underway and might deserve some of your attention.

Mr. **Paisley**. We are at a major crossroad in Navy AAW, and we need to make a very wise decision which will have profound impact on the future of the Navy. The evolution of the threat in the late 1980's and 1990's stresses current missiles performance. We vitally need to begin now, a program to develop our next generation surface-to-air missile. Our plan is to complete, by mid-fiscal year 1983, a thorough assessment of the AAW missile requirements for both ships and aircraft launching systems, and begin advanced development of a new surface-to-air missile. We could not hope to start a major missile program without exploring in depth with the other services and OSD the potential for component commonality in a joint program.

The Navy's assessment will address the requirement for long-range AAW systems, such as those previously represented by the Navy's Standoff Jammer Suppression, to determine the need for such AAW missiles. We are currently entered into a joint program with the Army called Army/Navy SAM Technology to develop multi-mode guidance, which could provide modular subsystems for the defined new surfare-to-air missiles. As appropriate, the requirements developed from our assessment will be implemented with joint programs. This will of course depend on technology required Initial Operational Capability of both parties, and system affordability relative to the Department of the Navy requirement.

LIGHT ARMORED VEHICLE

Senator **Cohen**. General Moore, we will pursue the Light Armored Vehicle questions in greater detail during a later hearing, but I do want to ask one question of you now. I have been advised recently that the LAV that the Marines are currently looking at has gotten much more expensive and less "off-the-shelf".

Is there any truth to this? And, if so, are you "gold-plating" this weapon?

Since these weapons are being used "off-the-shelf" around the world, what could conceivably justify the addition of considerable extra equipment that apparently is almost doubling the cost?

If you cannot answer these questions in depth now, please have your staff ready to respond during the appropriate hearing.

General **Moore**. The joint acquisition strategy for the Light Armored Vehicle (LAV) program is to immediately field the most effective vehicle at an affordable cost to the Government. This acquisition strategy does not allow time nor funding for "gold plating" this vehicle. The LAV's being tested by the Marine Corps and Army have been modified by the three contractors, at their own expense, to meet today's threat. Two important modifications in the Light Assault (LA) variant are the employment of the U.S. built 25mm Hughes Chain Gun and a two-man turret. As I am sure you are aware, Hughes' 25mm Chain Gun is the same as that used on the Bradley Fighting Vehicle. Essentially the remainder of the vehicle is as it has been produced by each contractor or is an extension of that same engineering technology. Cost for the LAV's have generally remained constant from our marketing survey back in 1980. We will have a better idea of price after the production costs are provided by the contractors, but it is presently envisioned that the family of vehicles will range in price from $207K (least sophisticated) to 641K, (most sophisticated) in constant fiscal year 1982 dollars.

AMPHIBIOUS LIFT

Senator **Cohen**. General Moore, the "fingerprints" of the MAF drive the size of the shipping we must procure. I have been led to believe that at least two of them—cube and helo spots—are growing out of control.

Is that true? And, if so, what are the causes? How do you plan on getting it back under control?

What are the specific effects on the amphibious fleet and how do you plan to compensate?

General **Moore**. There is no uncontrolled growth of cube cargo and helicopter spot requirements; however, the greatest gap between amphibious lift requirements and the available capability of amphibious ships is in the area of cube cargo and helicopter spots. Personnel and square footage for vehicles are much less of a problem.

Any item of equipment considered for procurement by the Marine Corps is evaluated against a number of criteria; one of those is the effect on amphibious lift requirements, because without adequate amphibious lift we are left with a Marine Corps with constrained capability. We have a staff section at Headquarters as well as a full-time study team at the Marine Corps Development and Education Command at Quantico dedicated to staying abreast of lift requirements and working with the Navy toward their fulfillment.

WEAPON INVENTORIES

Senator COHEN. The Navy's inventory objectives for some weapons has changed over the years. Please provide a historical record of the desired inventory levels for each of the years since 1970 for the weapons listed below: 5"/54 Full Charge; Sonobuoys (by type); Harpoon (by type); Tomahawk; SM-1 (by type); SM-2 (by type); Sea Sparrow; Mines (by type); Torpedoes (by type); ASROC; SUBROC.

Admiral TROST. The Navy's inventory objectives since 1970 are shown on the attached chart.

[Chart deleted.]

MINES

Senator COHEN. Admiral Trost, mines and mine warfare in the past have always seemed to fall out of the budget whenever the squeeze was put on. Our inventory levels are still significantly lower than we would like them to be. Would you please provide a funding profile for procurement of mines during the current five year plan?

Admiral TROST. The funding profile for mines for the current five year plan is as follows:

	Fiscal year—					
	1982	1983	1984	1985	1986	1987
Submarine launched mobile mine (SLMM):						
WPN (millions of dollars)	11.1	22.9	27.1	19.0	0	0
Quantity	(146)	(334)	(364)	(218)	(0)	(0)
Quickstrike:						
OPN (millions of dollars)	21.1	32.9	45.4	53.1	51.9	66.9
TDD (quantity)	(1,588)	(1,599)	(2,158)	(2,310)	(1,950)	(2,940)
MK-65 (quantity)	(307)	(579)	(660)	(500)	(500)	(460)
Captor:						
WPN (millions of dollars)	123.2	156.2	185.0	191.0	201.6	115.6
Quantity	(400)	(500)	(600)	(600)	(600)	(293)

Senator COHEN. When will we reach our inventory objectives for all current mines?

Admiral TROST. Considering a 20 month procurement lead time, we will reach our inventory objectives for all current mines as follows:

SLMM [deleted].

Captor [deleted].

Quickstrike [deleted].

Senator COHEN. You also mention that you will soon have an R&D program to fill the gap left by the demise of the Medium Depth Mine program. Please provide the subcommittee with that information as soon as it is available.

Admiral TROST. The programs proposed to develop a mine to fill the gap between Quickstrike (bottom mine) and CAPTOR (deep moored mine) have been expensive and complicated. We are currently re-examining the alternatives. The options studied will be presented to the Chief of Naval Operations in early May. The recommended option, if approved, will be forwarded to Secretary of the Navy in June 1982.

Senator COHEN. What other mine R&D efforts are on-going?

Admiral TROST. Other R&D efforts in the mine improvements program include CAPTOR improvements, hi-speed/lo-altitude delivery capability, development of versatile training mines, and minefield modeling upgrades.

RAPIDLY DEPLOYABLE SURVEILLANCE SYSTEM

Senator **Cohen**. The Rapidly Deployable Surveillance System (RDSS) has been floating around in various stages for nearly ten years. It would be useful to have this program better defined in order to stop this vacillation. Would you please provide a complete funding profile and program justification for this program.

Admiral **Trost**. RDSS is being developed as part of the Integrated Undersea Surveillance System (IUSS) which also includes the Sound Surveillance System (SOSUS) and the Surveillance Towed Array Sensor System (SURTASS). Undersea surveillance has a proven peacetime record in support of tactical Antisubmarine Warfare (ASW).

RDSS is [deleted] sensor which will quickly provide surveillance coverage in areas not covered by SOSUS and in areas beyond immediate SURTASS response. It similarly can provide localized ASW support to carrier battle group operations.

With RDSS as a backup to provide surveillance in areas where SOSUS or SURTASS is no longer available, [deleted].

RDSS complements SOSUS and SURTASS. It provides a quick-reaction, shorter range surveillance capability in areas where the other IUSS components are not available.

FUNDING PROFILE

[Quantity/millions of dollars]

	Fiscal year—						
	1981 prior	1982	1983	1984	1985	1986	1987
R.D.T. & E	29.5	6.8	50/19.4	[Deleted]	[Deleted]	[Deleted]	[Deleted]
OPN						234/8.6	561/17.4

GRADUATE FELLOWSHIP PROGRAM

Senator **Cohen**. Mr. Paisley, the Navy is requesting $1 million dollars for a Graduate Fellowship Program.

Programs of this type have been reduced significantly under recent actions by the administration. What is your best justification for this program?

Mr. **Paisley**. The Navy's Graduate Fellowship Program applies to U.S. Citizen PHD students in six specific areas: Computer Science; Electronics; Naval Architecture; Fluid Mechanics; Applied Physics; Material Engineering.

These areas have a low enrollment in graduate school and a very high fraction of foreign students. The U.S. presently has 2000 engineering faculty vacancies which is indicative of, and undoubtedly contributes to a shortage of trained scientists with these skills. The Graduate Fellowship Program is expected to be an effective way of attracting scientists into these critical skills where they could be employed by Navy laboratories and Navy contractors.

SUBROC

Senator **Cohen**. How much will it cost to extend the life of the SUBROC weapon system until a replacement weapon becomes available?

Admiral **Trost**. $30 million (then year $) are required to fund the existing SUBROC Service Life Extension Program (SLEP). The SLEP program will extend the Life of SUBROC missiles beyond the entry of the Common ASW Standoff Weapon to the fleet. An additional $7 million (fiscal year 1983 $) is required annually to maintain and support the SUBROC inventory.

In response to fiscal year 1982 House and Senate Appropriation Committee reports, the Navy is analyzing the feasibility, costs, and effectiveness associated with extending SUBROC capability to ships scheduled to receive fire control system modifications [deleted]. This analysis will also investigate the feasibility and costs associated with providing SUBROC capability to the newer [deleted] submarines not configured for SUBROC. The results of this investigation will be provided to Congress when completed.

Senator **Cohen**. Please provide a funding profile and a projected IOC for the improved weapon.

Admiral **Trost**. The IOC for the Common ASW Standoff Weapon is [deleted]. The required funding profile to meet this IOC is provided below.

Common ASW standoff weapon (then year dollars—millions)

Fiscal year 1981 and prior	26.0
Fiscal year 1982	39.6
Fiscal year 1983	42.0
To complete	[Deleted]
Total	[Deleted]

THE MARINE CORPS ADVANCED MANPOWER/TRAINING SYSTEM

Senator **Cohen**. There is $1.5 million dollars in the budget for an R&D program called "Marine Corps Advanced Manpower/Training System." Of this total, $1.1 million is for the development of "methodologies" intended "to improve manpower planning and control." It is not clear why new "methodologies" are required. Please provide justification for this program, and explain the final product.

Mr. **Paisley**. I will defer these questions to Brigadier General Moore.

General **Moore**. The Marine Corps Advanced Manpower/Training System provides for the automation of manpower data systems used in recruiting, assignment, training and force planning. Improvements include updates to the Enlisted Force Management System model which will allow manpower planners to forecast future force structures. Computerized Adaptive Testing, a joint service program to improve pre-enlistment testing of recruits is also funded under this project. Another model to be developed will allow planners to identify manpower requirements early in the systems acquisition process. The final product of these projects will be a number of improved manpower projection and force planning capabilities as well as a more accurate system for testing and assigning recruits to technical schools and Military Occupational Specialties.

Questions Submitted by Senator Carl Levin

AMPHIBIOUS SHIPS

Senator **Levin**. General Moore, what is the amphibious ship component of the so-called 600 ship Navy? In other words we now have some 67 amphibious ships, enough to carry about one Marine Amphibious Force as I understand it.

What are the numbers of amphibious ships you feel are needed for the 600 ship Navy?

How many amphibious ships are in the five-year building program?

When will you achieve the objectives for the amphibious part of the 600 ship Navy?

General **Moore**. The current goal of the Secretary of the Navy is to develop sufficient amphibious lift to transport the assault echelon of a Marine Amphibious Force and a Marine Amphibious Brigade. Deciding upon numbers and types of amphibious ships to build in order to fulfill the lift requirement is the Navy's responsibility. However, in terms of the types of ships we have today, the lift objective would equate to about 83 nominal amphibious ships, after allowing for 15 percent to be in overhaul at any time. The introduction of newer more capable ships would, of course, drive that number downward.

Twelve amphibious ships are planned through fiscal year 1987: ten LSD-41 class and two LHD-1 class.

Unfortunately, the shipbuilding plan does not provide for attainment of the amphibious lift goal. In fact, when current shipbuilding plans are coupled with projected ship retirement (at end of 30-year service life) over the next two decades, we experience a decline in amphibious lift capability.

SHIPS AND AIRCRAFT TO RESTORE MARITIME SUPERIORITY

Senator **Levin**. Admiral Trost, last year Admiral Hayward testified that an annual procurement program for the next five years of about 32 ships and 380 aircraft was the minimum essential needed to retain maritime superiority. The fiscal year 1983 ship building program includes 18 new ships and 288 aircraft. There are several aircraft programs that have been cut back from the fiscal year 1983 level forecast last year. Admiral Trost, what has changed in your estimate of the ship building and aircraft procurement programs needed since last year? Do you think this fiscal year 1983 program is adequate to retain maritime superiority?

Admiral **Trost**. In the testimony to which I believe you are referring, Senator, the CNO made this statement: "To restore our fleet and build our forces to an adequate level will require an annual procurement of about 30 ships and 380 aircraft to build to 15 CVBGs while we modernize and increase amphibious lift and improve strategic sealift. I believe the force I have described is realistically attainable within the industrial base and affordable budgeting levels." The five-year shipbuilding plan currently before the Congress would procure an average of 26.6 ships per year; the aircraft procurement plan, some 383.2 aircraft per year. So, in aircraft we are just about right with respect to the CNO's estimate. With respect to the ships, you will recall that the CNO's remarks were directed toward a 15 CVBG force, which is not contained in the current shipbuilding plan. I believe that restoration of maritime [deleted] requires that we procure and maintain 15 carrier battle groups. Still, if the program before you is executed, if the sustained rates of real growth in total obligational authority for the Navy are actually attained, we will be well on our way toward the goal of maritime [deleted] for the United States.

Senator Levin. Do you believe there will be enough money to finance the increased programs for the future years of the five-year defense program?

Admiral Trost. Our analyses show that with the projected real rates of growth, and if unprogrammed cost growth in our procurement accounts can be controlled and kept to a low level, we will have sufficient funds to carry out the program.

MARITIME SUPERIORITY

Senator Levin. Admiral Trost, what is maritime superiority? How will you know when you reach it? That is, how do you measure it before you have to use it? Given the Russian fleet today, what U.S. Navy force structure would we need to be sure we had maritime superiority? How many more ships? Of what type? How many more aircraft?

Admiral Trost. Maritime [deleted] means the ability to prevail in conflict. If challenged, we must be able to prevail in those areas vital to our national interests. In order for our forward strategy to be effective we must be able to use the seas for our own economic and military purposes and to deny similar use to our enemies. In conjunction with other U.S. military and allied forces, our naval forces must be capable of destroying or neutralizing enemy maritime power wherever it may exist.

Any measure of our maritime capability must be viewed in relation to our most likely and dangerous adversary, the Soviet Union. In time of conflict, U.S. and allied forces must be capable of meeting the threat head-on where necessary, reinforcing our forward-based forces, and threatening enemy forces and capabilities in widely divergent areas. The capabilities we must have to accomplish these tasks are strongly influenced by the trends in Soviet naval force development. Given the Soviet fleet today, we face a military capability that threatens our forward strategy because we do not, with confidence, have sufficient force levels to place the Soviet maritime capabilities at risk. Martime [deleted] is not matching the Soviets ship-for-ship, sailor-for-sailor. It is having the confidence that those martime tasks essential to our security can be accomplished successfully.

If the Soviets do not do anything significantly different from what we project today, I believe that execution of our five year shipbuilding and aircraft procurement plans as we submitted them to the Congress will put us well on the road to achieving the kind of maritime [deleted] we need. However, I must emphasize that in my judgment force levels of fewer than fifteen carrier battle groups would incure high risks. Performance of our wartime tasks with confidence, moreover, would require more than fifteen carrier battle groups.

I must emphasize also that regaining martime [deleted] hinges on sustained investment in the Navy. We must avoid stop and start, roller coaster funding, and embrace a long-term vision and policy of real growth in Navy budgets.

We are committed to the goal of maritime [deleted] for we believe it is required to safeguard or nation. I believe the Sense of the Congress Resolution on the 600-ship Navy reflects a broad Congressional agreement and feeling of urgency in attaining that goal as well.

Senator Cohen. The committee will stand adjourned.

[Whereupon, at 12:10 p.m. the hearing was adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

FRIDAY, MARCH 12, 1982

U.S. Senate,
Subcommittee on Sea Power and Force Projection,
Committee on Armed Services,
Washington, D.C.

DEFENSE OF U.S. INTERESTS IN SOUTHWEST ASIA

The subcommittee met in open session, pursuant to notice, at 2:05 p.m. in room 224, Russell Senate Office Building, Senator William S. Cohen, chairman, presiding.

Present: Senators Cohen, Byrd, Hart, Exon and Levin.

Staff present: Francis J. Sullivan, minority staff director; James F. McGovern, general counsel; Paul C. Besozzi, minority counsel; L. Wayne Arny III, Michael B. Donley, Robert S. Dotson, Richard D. Finn, James R. Locher III, David S. Lyles, José E. Martinez; professional staff members; Drew A. Harker, Ralph O. White, research assistants; Kathleen L. McGuire, staff assistant.

Also present: Jim Dykstra, assistant to Senator Cohen; Paul Schreiber, assistant to Senator Denton; Don Imgram, assistant to Senator Quayle; Gray Armistead, assistant to Senator Byrd; Greg Pallas, assistant to Senator Exon; Peter Lennon, assistant to Senator Levin; Bill Lind, assistant to Senator Hart.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator Cohen. The committee will come to order.

The defense of U.S. interests in the Southwest Asia region remains one of the major missions of the Department of Defense. Since President Carter formally identified this mission in his State of the Union address now more than 2 years ago, force planning and resource allocation for this mission have been given high priority within the U.S. defense effort.

Today's hearing is focused on the force established to discharge this mission; the Rapid Deployment Joint Task Force, which will soon transition to a separate unified command.

The purpose of the hearing is to provide an overview of U.S. military capabilities required to defend U.S. interests in the Southwest Asia region and to identify U.S. force projection requirements in other Third World areas.

Not only are these topics within the subcommittee's oversight responsibilities, but also the subcommittee requires the framework created by this information to make recommendations on the force projection programs included in the fiscal year 1983 defense authorization request.

On behalf of the subcommittee I would like to welcome the witnesses for today's hearing—Mr. West, Assistant Secretary of Defense for International Security Affairs; Vice Admiral Bigley, Director of J-5, Plans and Policies, in the Organization of the Joint Chiefs of Staff; and Lieutenant General Kingston, Commander of the Rapid Deployment Joint Task Force.

The subcommittee is anxious to hear the testimony of all three witnesses on the important issues before us.

During this hearing the subcommittee desires specifically to address the following key topics:

First, the range of potential threats to U.S. interests in Southwest Asia, their relative likelihood, and the differences in their force requirements;

Second, U.S. force planning strategy for meeting these threats—in essence, where are we putting our emphasis and why?

Third, organizational issues concerning SWA, including geographic boundaries, a forward operating element, and the relationship of CINCSWA to the Commander, Middle East Force; and

Last, programatic priorities for the RDJTF and more generally for the worldwide force projection mission.

U.S. thinking with respect to strategy, force requirements, and organization for this mission has, in some respects, matured and changed over the past 2 years. My recent trip to the Middle East and the Persian Gulf regions in February of this year has convinced me of the need for additional changes. I am hopeful that today's testimony will reveal that many of these needed changes have already been adopted.

Mr. West, I believe it would be helpful for the subcommittee to hear your statement first, followed by Admiral Bigley, and then General Kingston.

STATEMENT OF HON. FRANCIS J. WEST, JR., ASSISTANT SECRETARY OF DEFENSE FOR INTERNATIONAL SECURITY AFFAIRS

Mr. West. Thank you, Mr. Chairman. It is a pleasure to appear before your subcommittee.

In the interest of time I would propose that I simply submit my statement for the record and shorten it now. What I would like to do briefly, Senator, is to touch on an overview of our defense policies in the region, and then Admiral Bigley will focus on the organization of the RDJTF and General Kingston upon the capabilities.

Basically, the mission of the RDJTF is to conduct the planning, joint training and exercises and to be prepared to deploy designated forces to the Southwest Asian region. The RDJTF is programed to counter the most serious threat to the area, that of a Soviet invasion. But the Department is not unmindful that other threats require other security-related instruments of policy.

Our basic goals for the region are, first, to insure the security of Israel while promoting the continuation of the peace process; second, to support moderate states against overt attack by radical states; third, to support moderate states against the spillover of regional conflicts and subversion aided or directed by outside powers; and fourth, to limit the Soviet military influence and leverage in the region and to deter a Soviet mission.

RDJTF MISSION

The primary mission of the RDJTF relates to this fourth goal.

The first goal is insuring the security of Israel. President Reagan has reaffirmed the U.S. policy that Israel's qualitative technological advantage will be maintained and that we will be mindful as well about Israeli concerns with respect to quantitative factors and their impact upon Israel's security. Our military assistance to Israel exceeds that of any other nation and continues to rise. At $1.7 billion, the fiscal year 1983 request is 21 percent above fiscal year 1982 and accounts for 44 percent of U.S. military grants worldwide and 25 percent of the U.S. military credit worldwide.

Our second goal, that of supporting moderate states against overt attack by radical states, relates to the fact that interstate rivalries and conflicts independent of the Arab-Israeli dispute are a major threat which the Soviets can exploit. In some cases—Libya and Tunisia, Ethiopia and Somalia, Peoples Democratic Republic of Yemen, and Oman—the moderate state with whom the United States has good relations is deficient in military equipment compared to its adversary.

That brings us to the issue of security assistance. The leadership and the policy guidance in security assistance matters rests with the Secretary of State. The Department of Defense fully and very enthusiastically supports the State Department's fiscal year 1983 Security Assistance budgetary request; that is, a request for $5.6 billion of foreign military sales of which $950 million is grant, or forgiven loans; another $800 million are loans at concessional terms; and $3.9 billion are loans at prevailing interest rates, approximately 14.5 percent today.

Egypt, Turkey, Israel and Spain comprise about 70 percent of the FMS request; 40 other countries share the other 30 percent. In constant dollars we are allocating less in military grant assistance today than at practically any time since the end of World War II; yet as a Nation we have grown richer while our friends in many lesser developed countries are growing poorer, and the Soviet Union is providing to their allies and the LDC's at least twice our level of military grant assistance.

Overall, we simply are not devoting too much to military assistance, nor are we overemphasizing military assistance at the expense of economic assistance. I have another chart in my testimony that illustrates that while 30 percent of our own Federal budget goes to defense, only 20 percent of our grants overseas are for military assistance, while the other 80 percent are for economic assistance.

The Department of Defense plays an active role in security assistance through three means. First, the Secretary of Defense, under the direction of the President, has primary responsibility for the determination of military end-item requirements. Second, to meet any urgent requests the services must take from their own stocks the time for security assistance. Otherwise, a hard-pressed nation must queue up for as much as 2 to 4 years.

This is so because for several years Congress forbade procurement in anticipation of foreign military sales. Hence, there were no items on the shelf. In 1981 the service in general, and expecially the Army, were remarkably forthcoming in responding to Secretary Haig's initiatives in the Middle East and Southwest Asia following the assassination of President Sadat.

Third, Congress in fiscal year 1982 authorized a Special Defense Acquisition Fund to permit anticipatory procurement. Funding, at $300 million per year, is to come from recoupments from prior year sales. It will be a revolving fund to be replenished from its own sales. Oversight and authorization of the fund will be the joint responsibility of the Senate Foreign Relations Committee and, through referral, the Senate Armed Services Committee and the respective committee in the House. The Department is looking forward to consultations with these committees.

The fund is a major step forward because security assistance is complementary to the RDJTF. One is not a substitute for the other. Each faces a different task and confronts a different aspect of the Soviet threat.

Our third primary goal is to support moderate states against the spillover of regional conflicts and subversion which may be aided or directed by outside powers. Radical fundamentalist movements backed by foreign military aid and aggression are a genuine threat to the integrity of the region. Examples include the Libyan attempts at subversion in Egypt, Sudan, and Somalia, and the Iranian-backed effort at a coup in Bahrain. Many regional states are militarily weak and all depend on external support to equip and supply their armed forces.

These sorts of threats argue for greater diplomatic and economic measures in conjunction with support for security assistance and discussions through joint military commissions. Through such discussions the United States gains a better appreciation of the threats while the regional states better understand ways in which we can assist them.

LIMITING SOVIET INFLUENCE

It is when we come to the fourth goal, Senator, that of limiting Soviet influence and deterring a Soviet invasion, that we speak primarily about the missions of the RDJTF. The interrlated economies of the United States, Europe, and Japan, of course, cannot do without Persian Gulf oil. Soviet control of the gulf oil would totally change the political and economic shape of the world. The prime U.S. defense objective in Southwest Asia, therefore, is to prevent Soviet military hegemony. Nations in the region will shape their policies at least partly in accord with their perceptions of the prevailing military balance between the superpowers. The United States must not be perceived as wanting in either the will or the capability to defend Western interests, interests we share with the regional states.

DETERING SOVIET INVASION IN SOUTHWEST ASIA

To deter a Soviet invasion in Southwest Asia, the capability of and funding for the Rapid Deployment Joint Task Force have been increased. Employment of the RDJTF in furtherance of U.S. strategy has three time dimensions. First, given warning and timely political decisions, we would move forces as close as possible to the area of potential conflict. This would signal to the Soviets that we consider vital Western interests at stake and that further movement on their part would risk a war between the two superpowers. Should deterrence fail, the second dimension involves our ability to fight in the region. We must deploy forces rapidly to interdict and blunt a Soviet attack, although we would not be compelled to respond only at the Soviet point of attack. Third, this strategy must take into account how we would cope with the potential of a wider war. Conflict with the Soviets may not be contained to the region, and the United States would have to be prepared for a global confrontation.

A principal objective is to deny the Soviet Union the notion that it can necessarily confine a conflict to a region or fight in a manner of its own choosing. The Soviets would have to take into account the possibility of a long, widespread, costly, and ultimately unwinnable war. This would affect Soviet calculations of potential gains and risks involved with persevering with their invasion. The Soviet decisionmakers must calculate how to terminate a war, not just how to begin it.

SOVIET UNION—A GLOBAL SUPERPOWER

A limited clash with the Soviet Union, followed quickly by a cease-fire, is a possibility. But equally possible is a global war if the United States enters the combat to protect its vital interests. Academic restraints on assumptions about combat cannot repeal the facts of geography. Soviet combat aircraft fly regular sorties from Cuba, Angola, Ethiopia, South Yemen, Vietnam, and other places and are thus astride our lines of communications to Southwest Asia. Soviet submarines, aircraft, and surface combatants routinely intermingle with our carrier battle groups. The Soviet Union today is a global superpower. In times of crisis, we have not seen the Soviets withdraw their worldwide forces to their homeland; instead we have seen them, as careful military planners, posture to strike effectively in many theaters if war came. In World Wars I and II, the battle could not be confined to one theater. It would be imprudent to assume that in the 1980's war against the other global superpower to protect a vital interest of the West could be confined to one battlefield of our choosing.

Senator, as you said to the committee last year:

> It is difficult to envision any major shooting war between the United States and the Soviet Union confined or confinable to the gulf alone. In all probability such a conflict would spill over into at least the European theater.

Now, perhaps the Soviets would stand down all their forces worldwide with the exception of one place and allow us to move 10,000 miles unimpeded. Perhaps they would withdraw their fleets from the oceans of the world. But such assumptions have not in the past been the basis of U.S. defense planning.

Let there be no confusion. Discussions in prior years about a "1 and ½ wars" strategy or a "NATO war" were discussions about a global war. While verbal and resource emphasis was given to one theater, military planners were still taking into account combat at varying levels of intensity in the Pacific, in Korea, in the Indian Ocean, in Southwest Asia, in Africa, in the Atlantic, in the Caribbean, in the Mediterranean, on NATO's southern and central fronts, in the Norwegian Sea, and on NATO's northern flank.

GENUINE PERIL OF SOVIET AGGRESSION

In recent years we have come to recognize the genuine peril of Soviet aggression, outside NATO boundaries, against Western access to oil. One can assume and plan for a limited, direct defense in Southwest Asia, with U.S. lines of communication unchallenged, with no simultaneous buildup in NATO, with no dedication of forces to cope with Soviet overseas bases. Prudently, however, one should also plan for a wider war, because the choice of war may not be ours.

Service representatives testified to an Armed Services Subcommittee last week that even the very substantial fiscal year 1983 to 1988 Defense budget plan may not in all cases result in the forces required to obtain all national security objectives. The reason is not diffuse global commitments. The Reagan administration expects priorities among theaters to be set. As Senator Nunn has said, there is always a gap between strategy and resources. Recent defense funding efforts, in the assessment of General Jones, Chairman of the Joint Chiefs of Staff, "have begun to arrest and, in some cases, reverse the unfavorable trends, but much more must be done if the United States and its allies are to reduce the risks to an acceptable level." What we are talking about are sustained increases for the long haul. Our 5-year budget plan is intended to restore a tolerable balance of military power.

Assessments of capabilities, of course, are a different matter than assessment of defense policy and strategy. A strategy of global flexibility does not necessarily mean simultaneous, intense conflict worldwide. Quite the opposite. It means assessing the opponent's strength on the entire global chessboard, assessing the capabilities of allies and of theater criticalities, and assigning priorities and moves and countermoves designed to terminate the conflict speedily and with minimum escalation, while protecting the vital interests of the United States and its allies. If we say the Soviet Union is a mature global superpower in the 1980's then we must think globally.

The RDJTF has developed excellent logistics plans for quick movement to the Southwest Asia theater. In terms of developing flexible means of responding quickly, we are moving on several fronts, although these assets are not exclusive for the RDJTF. In my statement I have a chart which shows that in fiscal year 1982 Congress has allocated and in fiscal year 1983 we have requested substantial funds for military construction in Southwest Asia, a variety of sealift and airlift assets, and tactical and strategic airlift.

The purpose of such speed is to make it crystal clear to the Soviets that no cheap blitzkrieg—presenting the West with a fait accompli in terms of control of the oil—is possible. Instead, such an invasion would be a land war fought laboriously through narrow defiles, mountain pass after moutain pass. The Soviets, hence, must calculate the unpredictable course, scope and consequences of a long war. The Soviets would also have to weigh the possibility of United States moves where we held a dominant advantage or where we could prepare well for later combat. Those moves would be intended to change the political calculus of the Soviet decisionmakers. In our planning and programing, therefore, we do not look at Southwest Asia in isolation.

In conclusion, Senators, the mission of the RDJTF is to deter Soviet aggression in Southwest Asia, particularly as it threatens access to oil, and to prevent the threat of Soviet military power being used as a tool of political coercion. This requires the ability for rapid movement of substantial American forces. It requires planning for direct defense in the theater, and it requires planning on a global basis.

RDJTF CAPABILITIES

The capabilities of the RDJTF are increasing substantially, but this should not divert efforts to cope with the more likely threats in the region. So the Department strongly supports the President's request for security assistance and other means of assisting moderate, friendly states.

Hence, our policy is to: Strengthen the RDJTF; maintain a military presence in the area; expend access to facilities both in the region and en route; integrate the RDJTF into broader military options; and support security assistance and other measures aimed at more likely but less militarily demanding threats.

Thank you, sir.

[The prepared statement of Francis J. West follows:]

Prepared Statement by Hon. Francis J. West, Jr., Assistant Secretary of Defense for International Security Affairs

Mr. Chairman, it is a pleasure to appear before your subcommittee. The purpose of my statement is to discuss Defense policy for Southwest Asia and the role therein of the RDJTF. Vice Admiral Thomas J. Bigley, Director of Plans and Policy on the Joint Staff, will address the organization of the RDJTF. Lieutenant General Robert C. Kingston, Commander of the RDJTF, will describe its capabilities.

The mission of the RDJTF is to conduct planning, joint training, exercises and be prepared to deploy designated forces to the Southwest Asia region. The RDJTF is programmed to counter the most serious threat to the area, which would be a Soviet invasion of Iran. DOD is not unmindful that other threats require other security-related instruments of policy. In fact, for the Middle East and Southwest Asia, there are four primary Defense security goals designed to support our foreign policy in the area. They are:

1. Insure the security of Israel while promoting the continuation of the peace process;
2. Support moderate states (e.g., Saudi Arabia, Oman, Jordan, Egypt) against overt attack by radical states;
3. Support moderate states against the spillover of regional conflicts and subversion aided or directed by outside powers; and
4. Limit Soviet military influence/leverage in the region and deter a Soviet invasion.

1. INSURE ISRAELI SECURITY

President Reagan has reaffirmed the U.S. policy that Israel's qualitative technological advantage will be maintained and that we will be mindful as well about Israeli concerns with respect to quantitative factors, and their impact upon Israel's security. Our military assistance to Israel exceeds that of any other nation and continues to rise. At $1.7 billion, the fiscal year 1983 request is 21 percent above fiscal year 1982 and accounts for 44 percent of U.S. military grants worldwide and 25 percent of U.S. military credit worldwide.

The United States will continue to support Israel while seeking a fair and just negotiated settlement through the Camp David peace process. We recognize the need to enhance strategic cooperation and to build on the special relationship that exists between our two countries. It must also be recognized that Israeli security is deeply related to the Palestinian issue. Working toward a resolution of that issue is fundamental to the security of Israel.

2. SUPPORT MODERATE STATES AGAINST OVERT ATTACK BY RADICAL STATES

Inter-state rivalries and conflicts, independent of the Arab-Israeli dispute, are a major threat which the Soviets can exploit. In some cases (Libya-Tunisia, Ethiopia-Somalia, PDRY-Oman), the moderate state with whom the United States has good relations is deficient in military equipment compared to its adversary. This puts at risk states likely to advance our interests. It increases the chance that the Soviets can achieve their objectives by encouraging and abetting aggression by surrogate forces.

Our objectives are to enhance our influence with key area states and to limit Soviet relations with their regional clients. In our relationships with the region's states, we must strike a delicate balance between close cooperation and actions potentially endangering to the very regimes we seek to support. Through diplomatic means, we must make military cooperation more feasible. Accordingly, given a proper diplomatic-military balance, our defense policy is also paying attention to the security of the moderate states, primarily through enhanced security assistance programs.

The leadership and policy guidance in security assistance matters rests with the Secretary of State. The Department of Defense fully and enthusiastically supports the State Department's fiscal year 1983 Security Assistance budgetary request. $5.6 billion is requested for Foreign Military Sales, of which $950 million is granted, or forgiven loans; another $800 million are loans at concessional terms; and $3.9 billion are loans at prevailing interest rates. Egypt, Turkey, Israel and Spain comprise about 70 percent of the FMS request; 40 other countries share the other 30 percent. As Chart 1 shows, in constant dollars we are allocating less in military grant assistance than at practically any time since the end of World War II.

CHART 1

GRANT PROGRAM
(CONSTANT FY 82 $: BILLIONS)

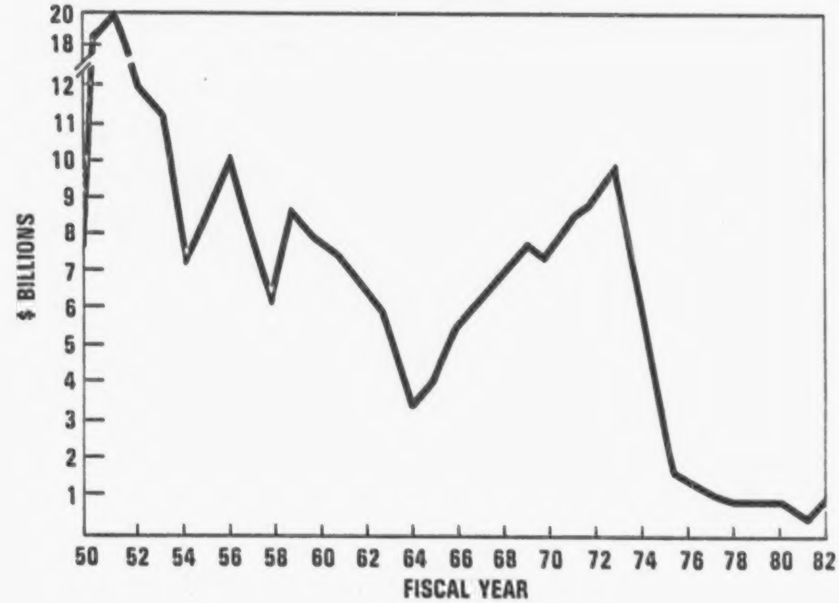
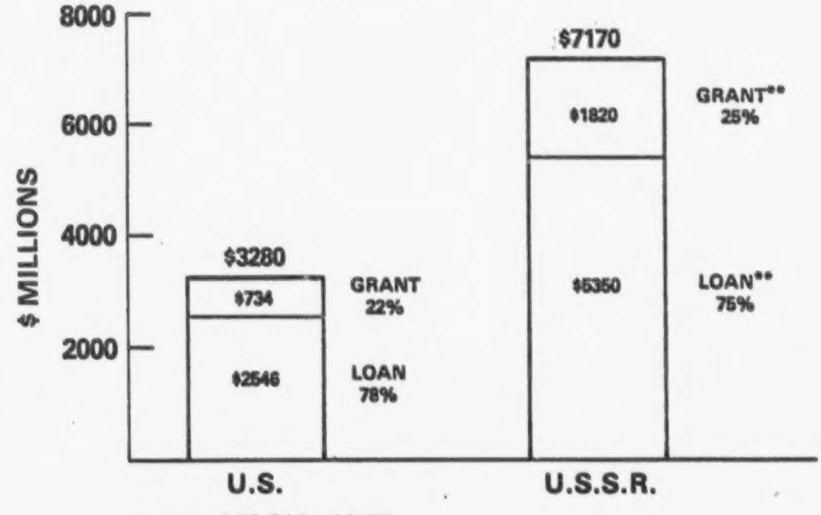


CHART 2

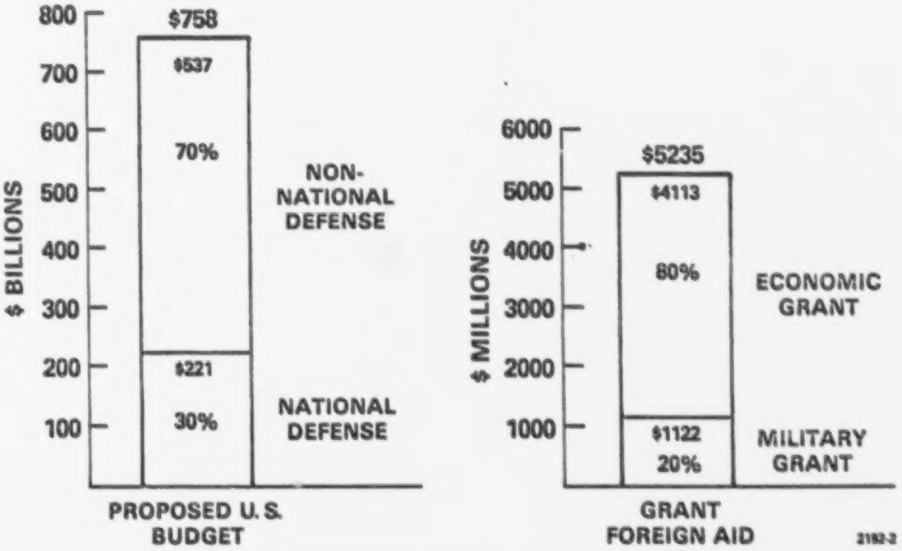
U.S. AND SOVIET MILITARY ASSISTANCE*
(FY 1981)



* EXCLUDES CASH SALES
** ESTIMATE

CHART 3

COMPARISON: U.S. BUDGET, DEFENSE SPENDING AND U.S. INTERNATIONAL GRANTS (FY 1983)



Yet as a nation we have grown much richer, while our friends in many lesser developed countries are growing poorer, and the Soviet Union is providing to their allies in the LDCs at least twice our level of military grant assistance (Chart 2).

We are not devoting too much to miltary assistance; nor are we overemphasizing military assistance at the expense of economic assistance.

Chart 3 illustrates that while 30 percent of our own Federal budget goes to Defense, only 20 percent of U.S. grants overseas is for military assistance. The other 80 percent is for economic assistance.

DOD plays an active role in security assistance through three means. First, the Secretary of Defense, under the direction of the President, has primary responsibility for the determination of military end-item requirements. Second, to meet urgent requests, the Services must take from their own stocks items for security assistance. Otherwise, a hard-pressed nation must queue up and wait as much as two to four years. This is so because for several years Congress forbade procurement in anticipation of foreign military sales. Hence there were no items on the shelf. In 1981, the Services in general—and especially the Army—were extraordinarily understanding and forthcoming in responding to Secretary Haig's initiatives in the Middle East and Southwest Asia following the assassination of President Sadat. Third, Congress in fiscal year 1982 authorized a Special Defense Acquisition Fund to permit anticipatory procurement. Funding, at $300 million per year, is to come from recoupments from prior year sales. It will be a revolving fund to be replenished from its own sales. Oversight and authorization of the fund will be the joint responsibility of the Senate Foreign Relations Committee and, through referral, the Senate Armed Services Committee and the respective committees in the House. DOD looks forward to consultations with the committees.

The fund is a major step forward. Many of the regional balances present serious problems to the affected moderate states, requiring skillful political maneuvering as well as armed might. After the Libyan-inspired, bloody attack upon the city of Gafsa, Tunisia has moved to develop a small, but balanced, deterrent military force. Egypt simply cannot afford to match Libya in numbers of sophisticated combat aircraft. Therefore Egypt's pilots must be better trained. Along Sudan's western border, Qadhafi used air attacks to try to weaken the authority of the central government, which had no air force and practically no air defense. The intimidation bombings were accompanied by efforts by subversion and revolution. Backed by Soviet and Libyan aid and Cuban forces, Ethiopia mounts occasional attacks against towns inside Somalia, attacks designed to weaken the credibility of the Somali government, which also faces a subversive movement funded and armed by Ethiopia and Libya. South Yemen, with Cuban, Libyan and Soviet aid, supplies and shelters the National Democratic Front in its war against the Government of North Yemen. Oman's Sultan Qaboos, a courageous friend of the United States and early supporter of Camp David, is subject to many broadcast-hours per day of shrill propaganda from South Yemen and Iran. Iraq-Iran war overflows are a real threat to Oman, Saudi Arabia and to the other Gulf states. Farther to the north, Jordan uneasily watches the steady buildup of Soviet equipment in Syria, with whom Jordan was on the brink of war in late 1980. Across the Gulf, Pakistan shelters the Afghan refugees and listens to the veiled and sometimes open threats of the Soviet Union. In most of these cases, there is an urgent need for correcting the military imbalance, a lack of funds, and sound reasons against an American military presence. Thus, U.S. security assistance is complementary to the RDJTF. One is not a substitute for the other. Each faces a different task and confronts a different aspect of the Soviet threat.

3. SUPPORT MODERATE STATES AGAINST THE SPILLOVER OF REGIONAL CONFLICTS AND SUBVERSION AIDED OR DIRECTED BY OUTSIDE POWERS

Radical fundamentalist movements, backed by foreign military aid and aggression, are a genuine threat to the integrity of the region. Examples include Libyan attempts at subversion in Egypt, Sudan and Somalia and the Iranian effort at a coup in Bahrain. Many regional states are militarily weak, and all depend on external support to equip and supply their armed forces. This increases their susceptibility to external influence, although most states resist over-dependence on either superpower. These circumstances are particularly enticing to the Soviets who, realizing that overt military aggression in Southwest Asia would risk general war with the United States, are more likely to opt for encouraging subversion and internal upheavals as a safer, more productive policy.

These sorts of threats argue for greater diplomatic and economic measures in conjunction with support for security assistance and discussions through joint military commissions. Through these discussions, the United States gains a better appreciation of the threats, while the regional states better understand ways in which we can assist them.

4. LIMIT SOVIET INFLUENCE AND DETER A SOVIET INVASION

The interrelated economies of the United States, Europe, and Japan cannot do without Persian Gulf oil. Soviet control of Gulf oil would totally change the political and economic shape of the world. The prime United States Defense objective in Southwest Asia (SWA), therefore, is to prevent Soviet military hegemony. Nations in the region will shape their policies at least partially in accord with their perception of the prevailing military balance between the superpowers. The United States must not be perceived as wanting in either the will or the capability to defend Western interests—interests we share with regional states.

To deter a Soviet invasion in Southwest Asia, the capability of and funding for the Rapid Deployment Joint Task Force have been increased. Employment of the RDJTF in furtherance of U.S. strateggy has three time dimensions. First, given warning and timely political decisions, we would move forces as close as possible to the area of potential conflict. this would signal to the Soviets that we consider vital Western interests at stake and that further movement on their part would risk war between the two superpowers. Should deterrence fail, the second dimension involves our ability to fight in the region. We must deploy force rapidly to interdict and blunt a Soviet attack, although we would not be compelled to respond only at the Soviet point of attack. Thirdly, this strategy must take into account how we would cope with the potential for a wider war. Conflict with the Soviets may not be contained to the region and the United States would have to be prepared for a global confrontation.

A principal objective is to deny the U.S.S.R. the notion that it can necessarily confine a conflict to a region or fight in a manner of its own choosing. The Soviets would have to take into account the possibility of a long, widespread, costly, and ultimately unwinnable war. This will affect Soviet calculations of potential gains and risks involved with persevering with their invasion. The Soviet decisionmakers must calculate how to terminate a war, not just begin it.

A limited clash with the Soviet Union, quickly followed by a ceasefire, is a possibility. Equally possible, however, is a global war if the United States enters the combat to protect its vital interests. Academic restraints on assumptions about combat cannot repeal the facts of geography. Soviet combat aircraft fly regular sorties from Cuba, Angola, Ethiopia, South Yemen and Vietnam and are thus astride our lines of communications to Southwest Asia. Soviet submarines, aircraft and surface combatants routinely intermingle with our carrier battle groups. The Soviet Union today is a global superpower. In times of crises, we have not seen the Soviets withdraw their worldwide forces to the homeland; instead we have seen them, as careful military planners, posture to strike effectively in many theaters if war came. In World Wars I and II, the battle could not be confined to one theater. It would be imprudent to assume that in the 1980s war against the other global superpower to protect a vital interest of the West could be confined to one battlefield of our choosing.

As Senator Cohen said to this committee last year: "It is difficult to envisage any major shooting war between the United States and the Soviet Union confined or confinable to the Gulf alone. In all probability such a conflict would spill over into at least the European theater."

Perhaps the Soviets would stand down all their forces worldwide, with the exception of one place, and allow us to move 10,000 miles unimpeded. Perhaps they would withdraw their fleets from the oceans of the world. But such assumptions have not in the past been the basis of United States defense planning.

Let there be no confusion. Discussions in prior years about "1 and ½ Wars" or a "NATO War" were discussions about a global war. While verbal and resource emphasis was given to one theater, military planners were still taking account of combat, at varying levels of intensity, in the Pacific, Korea, the Indian Ocean, Southwest Asia, Africa, the Atlantic, Caribbean, the Mediterranean, NATO's Southern and Central Fronts, the Norwegian Sea and NATO's Northern Flank. In recent years we have come to recognize the genuine peril of Soviet aggression, outside NATO boundaries, against Western access to oil. One can assume and plan for a limited, direct defense in Southwest Asia, with US lines of communications unchallenged, with no simultaneous buildup in NATO, with no dedication of forces to cope with Soviet overseas bases. Prudently, however, one should also plan for a wider war. The choice of war may not be ours.

Service representatives testified to an Armed Services Subcommittee last week that even the very substantial fiscal year 1983-88 Defense budget plan may not in all cases result in the forces required to attain all national security objectives. The reason is not diffuse global commitments. The Reagan Administration expects priorities among theaters to be set. As Senator Nunn has said, there is always a gap between strategy and resources. Recent Defense funding efforts, in the assessment of General Jones, Chairman of the Joint Chiefs of Staff, "have begun to arrest and, in some cases, reverse the unfavorable trends, but much more must be done if the United States and its allies are to reduce the risks to an acceptable level." We are talking about sustained increases for the long-haul.

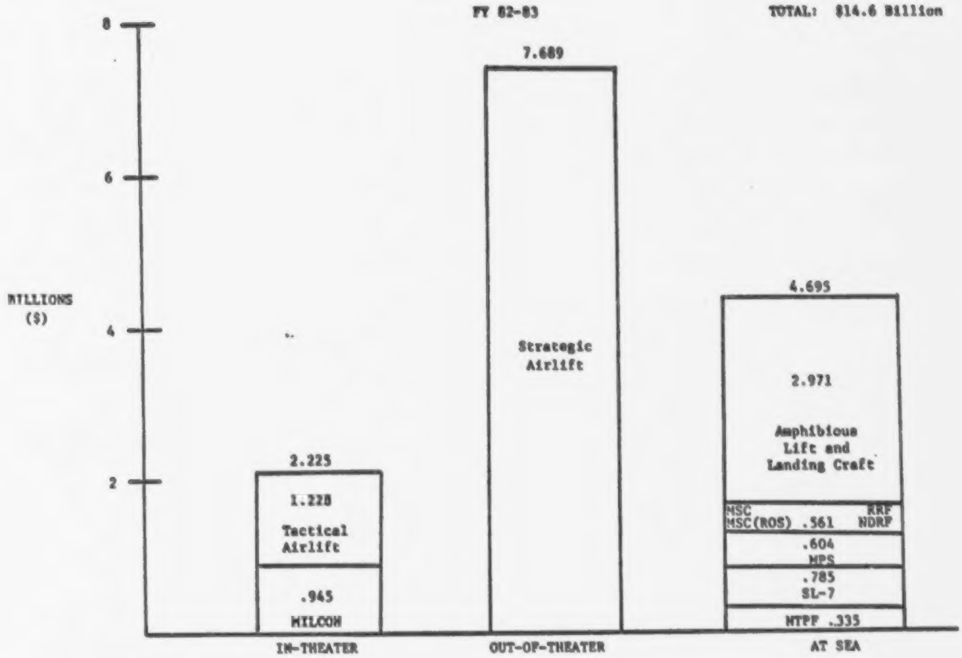
Assessments of capabilities, of course, are a different matter than assessment of Defense policy and strategy. A strategy of global flexibility does not necessarily mean simultaneous, intense conflict worldwide. Quite the opposite. It means assessing the opponent's strength on the entire global chessboard, assessing the capabilities of allies and of theater criticalities, and assigning priorities and moves and countermoves designed to terminate the conflict speedily and with minimum escalation, while protecting the vital interests of the United States and its allies. If we say the Soviet Union is a mature global superpower in the 1980s, then we must think globally.

The RDJTF has developed excellent logistics plans for quick movement to the Southwest Asia theater. In terms of developing flexible means of responding quickly, we are moving on several fronts, although these assets are not exclusive for the RDJTF. As Chart 4 shows, in fiscal year 1982 Congress allocated and in fiscal year 1983 we have requested substantial funds for: military construction in Southwest Asia, a variety of sealift assets and tactical and strategic airlift. The total dollar value is 14.6 billions. The purpose of speed is to make it crystal clear to the Soviets that no cheap blitzkrieg—presenting the West with a fait accompli in terms of control of the oil—is possible.

CHART 4

MEANS OF REACHING SWA

FY 82-83



INCLUDES PROCUREMENT AND O&M

Instead, such an invasion would be a land war fought laboriously through narrow defiles, mountain pass after mountain pass. The Soviets, hence, must calculate the unpredictable course, scope and consequences of a long war. The Soviets would also have to weigh the possibility of U.S. moves where we held a dominant advantage or where we could prepare well for later combat. Those moves would be intended to change the political calculus of the Soviet decisionmakers. In our planning and programing, therefore, we do not look at Southwest Asia in isolation.

In conclusion, Senators, the mission of the RDJTF is to deter Soviet aggression in Southwest Asia, particularly as it threatens access to oil, and to prevent the threat of Soviet military power being used as a tool of political coercion. This requires the ability for rapid movement of substantial American forces. It requires planning for direct defense in the theater and planning on a global basis.

The capabilities of the RDJTF are increasing substantially. But this should not divert efforts to cope with the more likely threats in the region. So DoD supports strongly the President's request for security assistance and other means of assisting moderate, friendly states.

Hence, our policy is to: strengthen the RDJTF; maintain a military presence in the area; expand access to facilities both in the region and en route; integrate the RDJTF into broader military options; and support security assistance and other measures aimed at more likely but less militarily demanding threats.

Senator COHEN. Thank you, Mr. West.

I must say that any Member of the Senate is always delighted to hear his eloquent words quoted back to him a year later as revealed wisdom. But I think what you have indicated, what I have indicated in the past, that you cannot expect to confine a conflict in the Persian Gulf to one region, surely goes to the heart of the question as far as the organizational structure of the RDJTF, as well as military capabilities, which we will talk about a little later.

I would propose that we hear testimony of all the witnesses before questions are asked. I suspect some of the questions I will ask later may require some classified answers. So we will proceed with the testimony.

Admiral Bigley?

STATEMENT OF VICE ADM. THOMAS J. BIGLEY, USN, DIRECTOR, PLANS AND POLICY DIRECTORATE, ORGANIZATION OF THE JOINT CHIEFS OF STAFF

Admiral **Bigley**. Mr. Chairman and members of the committee, I am pleased to have the opportunity to participate in this hearing today talking about U.S. military organization issues in Southwest Asia.

The RDJTF headquarters was established in March 1980 as a separate subordinate element under the U.S. Commander-in-Chief of the Readiness Command at MacDill Air Force Base in Florida to conduct predeployment planning and training for conventional non-NATO contingencies. When employed, the RDJTF was to be under the direction of the National Command Authority through the Joint Chiefs of Staff, or as otherwise directed by the Joint Chiefs of Staff.

Due to increased tensions in Southwest Asia, in August 1980 the mission of the RDJTF was narrowed in focus to planning and operations in the Southwest Asia area.

RDJTF

Subsequently in April 1981, the Secretary of Defense directed the evolution of the RDJTF into a separate unified command with its own geographic responsibilities, service components, forces, intelligence, communications, logistics facilities, and other support facilities.

The Secretary of Defense reaffirmed that planning would remain focused on Southwest Asia, but the command should preserve its potential for worldwide deployment. It is toward that end that the Joint Chiefs of Staff have published guidance for the RDJTF which provides the basis for evolution to unified command status.

On the first of October 1981 the RDJTF was designated a separate joint task force reporting directly to the National Command Authorities through the Joint Chiefs of Staff. With its own component headquarters and forces identified, the current mission of the RDJTF is to be responsible for planning, joint training, exercising, and being prepared to deploy designated forces to the Southwest Asia region.

The forces currently assigned to the RDJTF include two combat divisions and four tactical fighter wings with Navy and Marine forces designated to include up to three carrier battle groups and more than a division-equivalent of Marines.

Commander RDJTF, when designated a commander of a separate unified command, will have as his mission normal operations in the Southwest Asia area. This not only includes planning for the execution of hostile and nonhostile military operations, but also functionally interfacing on a daily basis with the Joint Chiefs of Staff and with other unified and specified commands, as well as supporting organizations within his region of responsibility, such as the Departments of State, CIA, DIA, and the Defense Communications Agency.

In addition, his headquarters will provide operational direction, intelligence support and logistics directive authority, plus civil affairs, environmental services, and communications-electronics coordination, and mapping and charting support to his service component commanders.

Normal day-to-day functions including planning and administration of security assistance, planning and conducting noncombatant evacuations and disaster relief operations, and providing training and coordinating continental U.S. training for military personnel from selected regional states.

In the event of hostilities, a commander of a unified command is expected to provide expanded functional support to the combat force commanders. To illustrate some of the specifics, in the area of logistics the commander of the unified command would establish a joint POL office, a joint transportation office, a joint medical regulatory office, and would consolidate overall lift requirements for forces, determine priorities, control all assigned or attached lift, and coordinate with all DOD transportation agencies.

The commander of the unified command would coordinate and supervise the development of the command and control network in the area of operations by providing the interface with national level command and control and providing the secure voice system and other physical/technical connecting facilities for full scope tactical communications.

Thank you, Mr. Chairman.

[The prepared statement of Vice Admiral Bigley follows:]

PREPARED STATEMENT OF VICE ADM. THOMAS J. BIGLEY, USN, DIRECTOR, PLANS AND POLICY DIRECTORATE, ORGANIZATION OF THE JOINT CHIEFS OF STAFF

Mr. Chairman and Members of the committee: I am pleased to have the opportunity to appear here today and participate in your hearings on U.S. military organization issues in Southwest Asia.

The RDJTF Headquarters was established in March 1980, as a separate subordinate element under USCINCRED at MacDill Air Force Base to conduct predeployment planning and training for conventional non-NATO contingencies. When employed, the RDJTF was to be under the direction of the NCA through the Joint Chiefs of Staff, or as otherwise directed by the Joint Chiefs of Staff.

Due to the increased tensions in Southwest Asia, in August 1980 the mission of the RDJTF was narrowed in focus to planning and operations in the Southwest Asia area.

Subsequently in April 1981, the Secretary of Defense directed the evolution of the RDJTF into a separate unified command with its own geographic responsibilities, Service components, forces, intelligence, communications, logistics facilities and other support facilities. The Secretary of Defense reaffirmed that planning would remain focused on Southwest Asia, but the command should preserve its potential for worldwide deployment. It is toward that end that the Joint Chiefs of Staff have published guidance for the RDJTF which provides the basis of evolution to unified command status.

On 1 October 1981, the RDJTF was designated a separate JTF reporting directly to the National Command Authorities, through the Joint Chiefs of Staff. With its own component headquarters and forces identified, the RDJTF is to be responsible for planning, joint training, exercising, and being prepared to deploy designated forces to the Southwest Asia region.

The forces assigned include two combat divisions and four tactical fighter wings with Navy and Marine forces designated to include up to 3 Carrier Battle Groups and more than a division-equivalent of Marines.

In the Middle East and Persian Gulf, the United States' position is that the best defense against outside aggression is a network of strong, independent and stable nations. Collective security is the responsibility of nations of the region. The Rapid Deployment Joint Task Force is intended to buttress that system, although it is only the military element in a much broader spectrum of efforts, including diplomatic initiatives and economic programs intended to protect the interests in the area of the United States and its friends.

Commander RDJTF, when designated a commander of a separate unified command, will have as his mission normal operations in the Southwest Asia area. This not only includes planning for and execution of hostile and non-hostile military operations, but also includes functionally interfacing on a daily basis with the Joint Chiefs of Staff and with other Unified and Specified Commands, as well as supporting organizations within his region of responsibility such as Departments of State, CIA, DIA, and DCA. In addition, his Headquarters will provide operational direction, intelligence support, and logistic directive authority plus civil affairs, environmental services, and communications-electronics coordination and mapping and charting support to his Service Component Commanders. Normal day-to-day functions include planning and administration of security assistance, planning and conducting non-combatant evacuations and disaster relief operations, and providing training and coordination CONUS training for military personnel from selected regional states.

In the event of hostilities, a Commander of a unified command is expected to provide expanded functional support to the combat force commanders. To illustrate some of the specifics, in the area of logistics the Commander of the unified command would establish a Joint POL Office, a Joint Transportation Office, a Joint Medical Regulatory Office, and would consolidate overall lift requirements for forces, determine priorities, control all assigned or attached lift, and coordinate with all DOD transportation agencies.

The Commander of the unified command would coordinate and supervise the development of the command and control network in the area of operations by providing the interface with national level command and control and providing the secure voice system and other physical/technical connecting facilities for full scope tactical communications.

The Rapid Deployment Joint Task Force is structured chiefly as a force to deter aggression from outside the Southwest Asia/Persian Gulf region and to assist nations in the region in resisting aggression from outside the region. Upon invitation from a friendly nation (or nations) in the region and when directed by the National Command Authorities, the Rapid Deployment Joint Task Force has the capacity to deploy rapidly a force to the Southwest Asia/Persian Gulf region. The presence of such a force would be intended as a signal to potential adversaries that movement of their armed forces into the area could result in direct confrontation with the United States.

Senator COHEN. Thank you, Admiral.

General Kingston?

STATEMENT OF LT. GEN. ROBERT C. KINGSTON, COMMANDER, RAPID DEPLOYMENT JOINT TASK FORCE

General KINGSTON. Mr. Chairman, it is an honor for me to be here today as commander of the Rapid Deployment Joint Task Force because I believe that we share the same objective, and that is enhancement of national security and the national defense, and I am confident that your subcommittee will contribute significantly to that end.

I have a prepared statement but I would like to submit it for the record and make a summary of that statement.

As stated previously, we were formed 2 years ago on March 1. The Rapid Deployment Joint Task Force now has a four-service headquarters. I have components with component forces, and I am in the transition from a joint task force toward a unified command with responsibilities to be able to conduct the normal operations expected to be conducted by a unified command.

The target date for completion of that transition is January 1, 1983. Today, with my headquarters consisting of members from all four services and the component commanders and their forces, we plan, exercise and work together.

Three years ago if the United States had to send a sizable force to Southwest Asia in the interest of the United States, no one could at that time have told you exactly what forces were to go, in what order they would go, how long it would take them to get there, how long that force would be sustained, and who would command it.

Today I can answer all of those questions, Senator. Given sufficient strategic warning time, we can project the force into Southwest Asia that I think will be appropriate to meet my given mission. Within 48 hours, given National Command Authority approval, we can begin to project the force. With sufficient warning time, I can have air from carrier battle groups in the Indian Ocean and land-based air in the area.

I can commit U.S. Marine Corps combat elements if they are in operation in the northern Indian Ocean within 48 hours. I can have an Army brigade in the area within 4 to 5 days, and I could have combat and combat support elements of a light division in the area within 2 weeks.

I do not believe that we have all the assets we will require to get us there in time and with sufficient force to complete the missions, and I think what we will need in the future is additional strategic sea lift, strategic air lift, and amphibious lift. We will need sufficiency and redundancy in communications, and for sustainability, I will need loctions en route, within the theater of operations and within Southwest Asia.

But I believe there has been significant enhancement in capability of the Rapid Deployment Joint Task Force and its component forces over the last 2 years.

Thank you, Mr. Chairman.

[The prepared statement of Lt. Gen. Robert Kingston follows:]

PREPARED STATEMENT OF LT. GEN. ROBERT C. KINGSTON, COMMANDER, RAPID DEPLOYMENT JOINT TASK FORCE

The Secretary of Defense has directed that the RDJTF transition to unified command status on January 1, 1983, which supports the concept of a rapid deployment force. This concept has been endorsed by both the Carter and Reagan administrations.

Today, the RDJTF is a joint task force. Our mission is to conduct planning for Southwest Asia contingencies, conduct joint training and exercises in support of those contingency plans, and to be prepared to deploy forces to the Southwest Asia region and employ those forces in accordance with contingency plans. We will transition to unified command status by January 1, 1983. As a result, COMRDJTF is charged with the responsiblity to manage this transition to unified command status into a geographic area of responsibility for normal operations. To enable us to fulfill these mission requirements, RDJTF now operates under the direction of the National Command Authority through the Joint Chiefs of Staff, and we have been authorized to communicate directly with the services and other commands and agencies, as appropriate.

Three years ago, there was no Rapid Deployment Joint Task Force. After the Iranian revolution, the taking of American hostages in Iran, and the invasion of Afghanistan, it became clear that the United States must come to grips with the realities in the Persian Gulf. At that time, if the President had decided to react to these crises by sending a large military force to Southwest Asia to protect United States interests, the U.S. Government would have had difficulty answering the following questions: exactly what forces would go; in what order; how long it would take to get them there; how they would be sustained; who the on-scene commander would be.

Today, as its commander, I can answer those five questions.

Some background information is appropriate at this time. On March 1, 1980, the RDJTF was established at MacDill AFB reporting to the JCS via USCINCRED. On June 1, 1981, component headquarters were designated and placed under the operational control of COMRDJTF as follows: RDJTF Army Headquarters: Headquarters, XVIII Airborne Corps at Ft. Bragg, N.C. Under its operational control are the 82d Airborne Division and the 101st Airborne Division (AirMobile); RDJTF Air Force Headquarters (AFFOR) at Shaw Air Force Base, co-located with the 9th Air Force. Additionally, on August 20, 1981, 11 tactical fighter squadrons were placed under the operational control of AFFOR; naval component headquarters at Pearl Harbor; naval forces, including marines, because of their operational nature are not designated but operate in support of RDJTF when deployed. However, when the marines go ashore, and amphibious operations are terminated, commander, marine forces (COMMARFOR) will be designated and placed under the operational control of COMRDJTF. Marine forces remaining afloat or subsequently reembarked for amphibious operations remain/revert to naval control.

On October 1, 1981, the RDJTF was established as a separate JFT, focusing primarily on Southwest Asia, and reporting directly to the NCA through JCS.

Today, we have a capable rapid deployment force which can react to any contingency, if so directed.

I believe that the best prescription for security in Southwest Asia is regional security—security provided by the nations of that region. While this must be at the initiative of the nations in the region, I believe that the United States should be prepared to assist.

And we have seen a hopeful step in that direction with the recent establishment of the gulf cooperation council.

But it's going to be some time before that council can provide the kind of regional coordination that's needed and, like it or not, the United States must be prepared to assist. In other words, we have to be prepared to aid our friends in the region diplomatically, economically and—if necessary—military.

You might ask how quickly I can move my forces to the gulf region and employ them there.

Given sufficient strategic warning; we can have tactical air on-scene in a matter of hours from land bases and/or from carrier battle groups on station in the Indian Ocean; we can have combat-ready marines ashore in the area within 48 hours, when a marine amphibious unit is on station in the area; we can move a full army brigade from the States and have it on the ground in the region within 3 to 4 days; the combat elements of an entire division can be in place in less than 2 weeks.

We are basically a force to deter aggression which seriously threatens the security of a friendly nation in the region. But if deterrence fails, we must be prepared to fight.

I have confidence in the RDJTF primarily because I've seen our forces train and I've seen them exercise. The scenarios that we have subjected these forces to over the past two years have tested our deployment procedures and capabilities and have exposed our forces to many potential contingencies. The results have improved with each exercise.

I'm sure many of you are aware of one of our most recent exercises—Bright Star 1982. It was conducted in Egypt, Somalia, Sudan and Oman during November and December of last year. It involved deploying 6,500 American personnel into the region. During the four separate operations conducted in these countries, we had forces deployed from 30 hours to 6 weeks. We deployed and conducted combined operations and redeployed without a single major incident or accident.

This was the second time the Rapid Deployment Joint Task Force conducted a major exercise in Southwest Asia, and the results were most gratifying.

During Bright Star 1982, we flew paratroopers all the way from Fort Bragg, North Carolina, nonstop, and dropped them in the desert—ready to fight; we landed marines from navy ships in the Indian Ocean—ready to fight; and we flew sorties from navy carriers ready to fight in the area; we flew air force fighter aircraft from the continental United States to a base in the region, and had them back in the air, ready to fight within two hours of the time they arrived.

I visited them all. And I can tell you I have nothing but the most profound respect for the young Americans I saw during that exercise. They are professional and they are enthusiastic about what they're doing for their country.

It was a widely varied exercise, but it demonstrated—in microcosm—some of the capabilities we have.

I must remind you, however, that exercises like this are relatively expensive, but preparedness doesn't come cheap. In the end, being unprepared can be far more costly.

Now we've established a basic capability for the RDJTF, but our problems are not all solved. We must continue to work on improving our capability.

We need more airlift and sealift to deploy faster and in greater numbers. Our command and control communications need more redundancy to insure continued communications should we lose an important link. We must improve our ability to resupply and sustain our forces once they're on the ground. My people are working diligently on these problems and I'm confident that our capabilities will improve. The service program objectives memorandum are step in the right direction.

Now let's look to the future of the RDF.

As I mentioned earlier, we are in the process of transitioning from joint task force status to that of a unified command. As we continue the transition to a unified command, the Rapid Deployment Joint Task Force will take on more responsibilities and my staff will continue to increase.

When we began in March 1980 we had 258 personnel assigned. We are increasing to 967 which is the number of personnel required to provide the staff for unified command status. These personnel are scheduled to report on board by January 1, 1983.

At this time, the RDF can deploy and provide a formidable force for peace in the Southwest Asia region.

We know how to respond, with what forces, and who will command these forces. I assume that the Soviets are well aware of the RDJTF's capabilities.

The RDJTF is a solid, professional organization. We still may not have everything we need, particularly in the areas of sustainability and in airlift and sealift, but we can be proud of the progress that's been made.

As a soldier, I hope that the RDJTF will never be required to be employed for combat. Again I emphasize our purpose is to deter aggression—but if deterrence should fail, the Rapid Deployment Joint Task Force is ready!

Thank you.

Senator COHEN. Thank you very much, General.

First let me say that I think these meetings are particularly helpful, and I think a rather healthy exchange of information between the Congress and the Department of Defense has been productive, as shown by last year. You may recall that when this subcommittee first became involved in the study of the Rapid Deployment Force, we had open hearings. That was an issue that was much debated at that time, whether we should have such hearings.

Second, I recall that only one member of the Joint Chiefs of Staff recommended that we go to a separate, unified command. I would point out that you, Mr. West, have always given your cooperation and so has the Deputy Secretary of Defense, Mr. Carlucci, who always indicated a willingness to listen to what benefit would be provided by this type of hearing. Both of you indicated you would keep an open mind and try to formulate policy consistent with the kind of evidence that was coming out.

To the Secretary of Defense's credit, he did exactly that in recommending a move to a separate, unified command. So I think some very positive results have evolved by that type of cooperation.

Mr. West, you indicated that there are a range of potential threats to the U.S. interests in Southwest Asia.

I am sorry. Before I ask any questions, would you like to make an opening statement?

Senator BYRD. I think not. I have a few questions.

THREATS CONFRONTING U.S. INTERESTS IN SOUTHWEST ASIA

Senator COHEN. I will just ask a few questions and then yield to you.

There is a range of threats that confront U.S. interests in the Southwest Asia region; would you list those? Your opening statement lists the range of possible threats, from Soviet invasion to destabilization to internal subversion, and so forth; but I would like, if not from you, perhaps from General Kingston, an estimate of seriousness of these potential threats, and their likelihood.

I would like your listing of priorities in terms of what is the most serious, what is the most likely.

Mr. **West**. Well, Senator, I believe the most serious would be a full-blown invasion by the Soviet Union. The most likely, I think, is exactly what we are seeing today, starting at the other end of the spectrum with subversion, which has its roots partially in inherent social, economic, and political problems, and partially in the aid and abetment such radical movements receive from powers that are hostile to the U.S. interest.

I would cite a few examples. I would cite the efforts of Qaddafi of Libya to incite subversion in the Sudan, and also to use Libyan air power in Chad to bomb inside the Sudan to weaken the credibility of the central government of Sudan. In turn, of course, the stability of Sudan directly affects Egypt. For example, when one starts with subversion and puts on top of it an external military threat that spills over into a regional problem, it is not just a problem for one nation.

Another example is the problem President Siad Barre of Somalia faces today. On the one hand he has an active insurgency inside Somalia which is aided and abetted by funds and equipment coming through Ethiopia. There are over 12,000 Cuban troops and over 2,000 Soviet advisers inside Ethiopia.

In Oman where the Sultan of Qaboos has been a very courageous friend of the United States and a strong and early supporter of the Camp David process, one sees that the Sultan of Qaboos receives dozens and dozens of hours of shrill and invective propaganda beamed against him coming from the PDRY, the People's Democratic Republic of Yemen, where there is a strong Cuban and Soviet influence. He is also receiving such propaganda from Iran and the Soviet Union.

So I would say, Senator, the most likely threat is the pattern we are seeing today, both internal and external threats all mixed together. But the most serious would be the direct threat of Soviet military aggression.

Senator **Cohen**. How would the U.S. mobility requirements for those situations differ, especially the granting or withholding of access to the in-region or en route facilities? In other words, you have different types of threats. It is one thing, I suppose, if you have an invasion by the Soviet Union coming through the Transcaucus region. The reaction of our allies or friends in that area, as to what access the United States might have, would be straightforward.

If you reduce it down from a level of a full-scale Soviet invasion, down to something less, perhaps an external threat from the Libyans or Cubans or maybe Yemenites or others, down to, let's say, internal subversion supported by the Soviets or one of their surrogates—don't you run into a conflict, in terms of what level of support we can expect from our allies? Does not it depend upon the degree and nature of the instability or subversion?

What I am getting at is, that even at this time, we have friends with whom we have had difficulty in getting overflight rights and refueling rights, even to conduct exercises with Egypt; isn't that correct?

Mr. WEST. I would like to give a general answer and then ask General Kingston if he wants to respond. I believe in most cases it would be inappropriate for American combat power to be associated with the most likely threats. The states do not need our direct help, have not asked for it, nor have we offered it for those kinds of threats.

I would expect that we would be requested to assist in the event of the least likely threat: that is, the most dangerous threat, the Soviet invasion. In terms of the particular case that you cite, I would ask General Kingston if he has any comments on that.

General KINGSTON. Mr. Chairman, I agree with the sequence of threats. If the United States is to respond to some type of request for assistance in Southwest Asia, obviously from a friendly government, and the National Command Authority so directs, that is the benefit of having an existing four-service headquarters like the one that I now command. I can capitalize on the unique, in some cases, in-place capabilities of the Navy and Marines operating in the Indian Ocean. Postulated against the threat—the most likely situation I envision is that the United States would be asked to assist a friendly nation by providing communication and in-country transportation; namely, tactical air—I have the capability to provide those types of services if directed.

SHAPING THE RDJTF

Senator COHEN. That is what I am trying to get at in a very indirect way. Perhaps we should formulate or shape the RDJTF in such a way as to make it more useful against the lower, most likely types of threat, with the capability of doing that without being dependent upon having access to facilities, having overflight rights and having refueling rights granted to us. In other words, we want to make sure the RDF has the potential and the capability of being called upon and utilized without regard to these other external factors which may or may not be there.

That is what I am trying to get at in terms of the shape of the RDF. Do we structure it in such a way that we are looking for the worst threat, namely, the Soviet invasion? Do we structure the RDF in such a way that we overlook the very real problem that we might have, that you might not have, in the lesser threat situation, the facility access, overflight rights, and refueling capability to get the forces there?

I am really trying to move us in the direction of responding to questions as to how we shape the RDF. Is it mostly a maritime operation reinforced by land and air support, or is it primarily structured upon the most severe threat, a massive invasion by the Soviet Union? That to me is one of the crucial issues facing the DOD and the Congress.

General **Kingston**. I think it is not an either/or situation, Mr. Chairman. I believe that the United States must have the capability to respond to all types of threats, particularly in this vital area. I believe that I have the capability to do that with component forces, or those forces, namely, the Marines and the United States Navy, that would be operating in support of the RDJTF.

Now, there are times when the Rapid Deployment Joint Task Force would probably not even be committed but some of my components would be, again depending on what the threat and the assistance required is. I think if combat forces, whether they be Navy air, Air Force air, Army ground or Marine combat forces, are committed in this area, a headquarters working with these components should be committed to command it,

But we have today the capability, I believe, of meeting the full spectrum of threats that we will be called upon to send assistance to counter. And when I say assistance, I am talking about military resources, people, aircraft, communications, transportation-type things—the very low spectrum.

I think the RDJTF and eventually the—whatever we are going to call this unified command that we will transit into by January of 1983—must have the capability to meeting the most likely threat if called on, and also the most unlikely threat. It is easy to cut down to a lesser threat if you are prepared and have the forces that are trained and working together and exercised in the countries that we have been in throughout Southwest Asia and working with the host nations in that area, than it is to gear up under pressure to meet a certain contingency.

Senator **Cohen**. The point I am trying to make is that the assessment of the nature of the threats, their likelihood and their severity has a direct impact upon the shape of things to come in the way of military equipment. For example, for the past 2 years, up until this year, we had a great deal of emphasis placed upon the CX transport plane. The rationale for that was that we might be going to regions which had either narrow or very short runways which would require a newly-designed aircraft.

Well, that has not been greeted with a good deal of congressional support. The Department of Defense has decided to cancel plans for the CX and go instead with the C-5 or other transport equipment, which means that they will have to land either in major air facilities and then shift to perhaps helicopters, or else use other air lift transportation opportunities.

So, all I am getting at is how do we shape this RDF, and what are the most likely types of conflicts we expect. This will have a great deal of relevance in terms of the kind of equipment we agree to fund. There may have been shifts, as we have indicated, from just 2 years ago or 1 year ago in the nature of the perceived threat and the primary mission of the RDF. I know that Mr. West indicated that it is No. 4 but it is still the primary one; the primary mission of the RDF is still to interdict and defeat the Soviets coming through the Transcaucus.

I think, nonetheless, there has been an evolution, in assessing the nature of the threat to that region, it is perceived more as internal instability and subversion than as a major thrust by the Soviets. And that will have an impact upon whether you have more maritime power, whether you have two aircraft carriers, whether you are trying to project more carrier battle groups into that region, and whether we are going to go with the C-5 instead of CX.

All of these questions really evolve around how we assess the likelihood of the threats, the kind of cooperation we can expect from Turkey, from Spain, and from Portugal in terms of refueling and overflight rights. All of those questions have a direct bearing on how we configure this particular RDF.

I have a number of other questions, but I would like to yield to my colleagues.

Senator Byrd?

Senator **Byrd**. If any of these questions call for answers of a classified nature, let me know, if you will.

Secretary West, last year Under Secretary Ikle stated that over $4 billion was allocated directly to defense of Southwest Asia. Is that the level of funding supporting defense to Southwest Asia in the fiscal year 1983 budget?

Mr. **West**. Senator, I would like to ask Admiral Bigley, who has researched this carefully, to answer it also and correct me if necessary. The issue of how one accounts for costs in our general purpose forces is difficult precisely because our forces are general purpose.

The figure of approximately $4 billion, somewhere between $2.6 billion and $4.1 billion, is the rough level of funding that our accountants identify as being devoted to Southwest Asia. There is a much larger aspect of the funding that is devoted to giving us the mobility, to giving General Kingston a well-equipped force which could be used in other contingencies, and therefore is not exclusively for Southwest Asia.

So roughly speaking, that figure is about right for exclusive of Southwest Asia. However, in pricing the entire RDJTF and its capabilities, it would be much higher, but that force could be used in many other contingencies and therefore is not dedicated just to Southwest Asia.

Admiral.

Admiral **Bigley**. Senator Byrd, I believe that Dr. Ikle said was probably correct in talking about the fiscal year 1983 program and $4 billion for Southwest Asia, but the assets being programed in 1983 for Southwest Asia would not exclusively be used in Southwest Asia.

Getting back to Senator Cohen's question earlier, when you postulate a force and program a force for the worst case scenario in Southwest Asia, you are able then to have the availability of forces to take a lesser demanding scenario. Most of the assets programed for Southwest Asia are mobility and lift forces which can be used for other theaters if indeed the decision is made by the national command authority not to employ forces in that particular theater.

Over the 5-year program, you recall, the 5-year defense program, only $2.5 billion of that 5-year program is unique to Southwest Asia. The rest of the dollars in that 5-year program have other uses and could be employed in other ways other than just for scenario in Southwest Asia. They would allow you to move forces to any other theater.

Senator BYRD. For clarification, you used $2.5 billion. Is that over the 5-year period or annually?

Admiral BIGLEY. That is over the 5-year period, with the entire program, about $15 billion, in the FYDP. $2.5 billion, less than 1 percent of the total FYDP, would be unique for Southwest Asia.

Senator BYRD. So could we wrap it up in this way: That while approximately $4 billion is allocated directly to defense of Southwest Asia, the actual allocation under certain conditions could run much higher than that?

Admiral BIGLEY. No, sir, I would not assess it that way. I would say that part of the $4 billion which Dr. Ikle said was for Southwest Asia and the RDJTF could be used to give us greater mobility and flexibility in the deployment of our forces worldwide, if necessary. But, military construction funds for Southwest Asia facilities unique to the RDJTF would be the part of that $4 billion. I do not have a breakout of just how much that is for 1983, except in gross terms.

Senator BYRD. Do you have, if you break down by elements, this total funding level by appropriation account?

Admiral BIGLEY. Yes, sir, I am sure we could, but I would like to provide that, if we may, for the record. I do not have that with me.

[The information follows:]

FUNDING FOR SWA

Answer. The funding figures provided are derived from the President's fiscal year 1983 Budget, and show Total Obligational Authority (TOA). Many of the funded items contribute to, but are not unique to Southwest Asia capability or requirements, and are listed separately. Examples of these type items include strategic mobility and transportable communications equipment.

FUNDING

[In millions of dollars]

	Fiscal year 1982 and prior	Fiscal year 1983	Fiscal year 1983–87 total
Southwest Asia—unique:			
Construction of POL storage	199.4	66.6	
Improvement of existing ports:			
Egypt, Kenya, Somalia, Diego Garcia	121.7	64.4	
SWA Infrastructure	0	3.0	[Deleted]
SWA MILCON program for basing/storage/support (through fiscal year 1985)	788.0	474.1	
Maintain near-term prepositioning force (NTPF)	277.0	171.0	(1)
Add rapidly deployable medical facility (RDMF) (Hospital Ship) to NTPF	13.0	0	(1)
Add ammunition ships to NTPF	12.2	50.0	(1)
Add transport auxiliary lighter ships (TALS) to NTPF	14.0	6.0	(1)
Southwest Asia—related:			
Procurement of 50 C–5B aircraft	270.0	860.0	
Procurement of 60 KC–10 aircraft (funds procurement of 42 of 60 planned aircraft)	1074.3	829.1	
C–5 wing modification	651.5	293.8	
C–141 fuselage stretch and aerial refeuling addition	512.0	0	
C–141 other war reserve material (OWRM) (allows higher aircraft utilization rates)	70.4	12.8	[Deleted]
C–5 OWRM	226.3	12.6	
Civil Reserve Air Fleet (CRAF) enhancement	17.4	0	
Procurement/conversion of 8 SL–7 fast container ships	623.0	322.6	
Expand Ready Reserve Force (31 to 44 ships)	36.2	19.9	(1)
Procurement of logistics over the shore (LOTS) equipment	27.3	55.4	[Deleted]
Containers over the shore (COTS)	19.6	3.0	(1)

FUNDING—Continued

[In millions of dollars]

	Fiscal year 1982 and prior	Fiscal year 1983	Fiscal year 1983–87 total
Auxiliary crane ships (TACS)	16.2	5.2	([1])
Single channel ground-to-air radio set (SINGCARS)	38.8	37.3	
Joint tactical information distribution system (JTIDS) (through fiscal year 1984)	265.7	225.9	
Seek talk have quick radios	64.2	89.8	
JAM resistant secure communication (JRSC)	0	62.1	
Joint communications support element (JCSE) enhancement	46.3	0	[Deleted]
JCSE mobilization	20.8	6.5	
HF improvements	9.7	54.4	
Tropospheric scatter radio	65.0	78.1	
Joint crisis management capability (through fiscal year 1985)	13.2	44.6	
MILSTAR joint satellite program	0	79.8	
Ground mobile forces satellite terminal	542.1	435.4	
Maritime pre-positioning ships program (MPS) (follow on program to NTPF worldwide)	60.0	40.0	

[1] Being developed.

STATUS OF DIEGO GARCIA

Senator **Byrd**. Let me ask you this, Admiral. What is the status of Diego Garcia? Is it being used in a major way? What improvements have been made there recently, and so forth?

Admiral **Bigley**. Yes, sir. As you well know, Senator Byrd, a great deal has been put in Diego Garcia over the past 10 to 12 years. There are military construction programs in the budget for this year to improve the capabilities of Diego Garcia. We also have positioned in Diego Garcia the pre-positioning ships, 13 of them, which contain the equipment to support the 7th Marine Amphibious Brigade, which is assigned to support General Kingston as part of his Rapid Deployment Joint Task Force.

So Diego Garcia is indeed being used in a prepositioning spot and other ways to get logistic support into the area.

Senator **Byrd**. Is it what you would describe as a major base?

Admiral **Bigley**. I hesitate on the term major because it connotes a lot of things, the difference between Army, Air Force, and Navy. I say it is a very significant base and the most significant base that we have in the Indian Ocean area to be able to do the things that we need to do today, but it does not have, for instance, all of the repair capability that you would find at the Norfolk Naval Shipyard as far as our ships are concerned.

So I would say it is a very significant base. I could not characterize whether it was major.

Senator **Byrd**. Could you indicate roughly the amount of funding in the fiscal year 1983 budget for Diego Garcia?

Admiral **Bigley**. For fiscal year 1983, sir, there is $85.8 million in Diego Garcia; this current fiscal year, $237.8 million.

Senator **Byrd**. How much have we put into Diego Garcia in the last 5, 6, or 7 years, whatever it might be?

Admiral **Bigley**. I am afraid I would have to get that figure for you, sir. I only have it back to fiscal year 1981. That was $131.9

million in 1981, $237 million in 1982, and $85.8 million in the current request.

Senator **Byrd**. $453 million, roughly, in 3 years, $453 million. Could you supply the other figures for the record?

Admiral **Bigley**. Yes, sir.

[The information follows:]

MILCON FUNDING FOR DIEGO GARCIA

Milcon funding for Diego Garcia for the five years prior to 1981 is as follows:

Fiscal year:	*Millions of dollars*
1976	$16.4
1977	0
1978	7.3
1979	0
1980	16.1

SUFFICIENT WARNING TIME

Senator **Byrd**. General Kingston, you several times used the words "if given sufficient warning time" that such and such would be done. Could you indicate what you regard as being sufficient warning time?

General **Kingston**. Yes, sir. I believe that we will have a certain amount of warning time and that is against the most significant threat. Of course, internal and interregional problems provide much less in many cases, if any, strategic warning. Along with the strategic warning would have to be the decision of the National Command Authority to commit the forces.

Senator **Byrd**. But you feel that you would have as much as that?

General **Kingston**. For the major threat, yes, sir.

Senator **Cohen**. Would you yield? How would you distinguish between a mobilization, let's say, by the Soviet Union for a major threat and for just exercises, where the Soviets decide they want to exercise in Afghanistan? Doesn't that determine what kind of notice you are going to have?

General **Kingston**. It certainly would, and I can expand on that in the closed session, Mr. Chairman.

Senator **Byrd**. General Kingston, in your written statement you have noted that the RDJTF has steadily increased its capability since its formation. Is there a proper balance today between combat and support forces that would be provided to you if forces were to be deployed in Southwest Asia?

General **Kingston**. Senator, I would like to answer that by saying that obviously I have the forces that are given to me by the Joint Chiefs of Staff. We are looking very closely at not the ratios as much of combat, combat service supports to combat, but the capability to support and sustain in a bare-based theater of operations, again depending on the threat and a projected time that we would have to keep that force there.

All services are looking at the roles that the components of a unified command will have to play and have to accomplish in the unified command status role, peacetime and wartime, Senator. If you are looking for a balance, so many logistical and so many artillery units, the sustainability of the force is both by combat and by logistical support.

Senator **Byrd**. General Kingston, what improvements, if any, need to be made in the support area to obtain the support capability you feel you would need?

General **Kingston**. I can elaborate on this more, later if you wish, but I am talking about support elements, as we mentioned earlier. The host nations support the overflights and what is in-country, whatever country we go into, what we can use there so we don't have to take it with us.

If we have to take it with us, we are taking a tremendous logistical and sustainment effort halfway around the world, and that is very costly in both air lift and sea lift, as you know, sir.

Senator **Byrd**. Does Diego Garcia figure into your operation?

General **Kingston**. It most certainly does. My pre-positioned ships are located there at this time.

Senator **Byrd**. You regard that as an important and significant base?

General **Kingston**. As Admiral Bigley said, yes, sir, I would.

Senator **Byrd**. I may have other questions that I will submit for the record, Mr. Chairman. Thank you.

Senator **Cohen**. Senator Exon?

Senator **Exon**. Thank you, Mr. Chairman?

Mr. Secretary, you probably have read in the newspapers the suggestions made by Senator John Tower, chairman of the Armed Services Committee, with regard to his ideas about improving the overall thrust of the RDF. Have you seen those, the suggestions, in writing?

Mr. **West**. I have seen newspaper reports, Senator, but I have not seen a transcript of what Senator Tower actually said.

Senator **Exon**. I was going to ask you what you thought of his suggestions. Are you able to respond?

Mr. **West**. I hate to respond, sir, to what someone may have said when it may be what he did not say. Could I try formulating what I believe Senator Tower said? I believe Senator Tower said that we must pay more attention to the more likely threats, and that too much of a focus upon the Soviet threat may ignore the actual political dynamics of the region and result in our not being able to assist in the way that would most insure against a gradual Soviet hegemony over the area.

Is that anywhere close to what he said?

Senator **Exon**. I think that is generally what he said. What do you think of that? Do you agree with that theory?

Mr. **West**. Basically, I believe that Senator Tower is very sound in his assessment. Since Deputy Secretary Carlucci came before this subcommittee a year ago and gave marching orders to his staff on what we should be doing, most particularly in conjunction with the State Department and security assistance and in attending to the more direct needs of some of the nations, then I think we have taken several steps forward.

I could go into more detail in a closed session, but I do believe that Deputy Secretary Carlucci took seriously that imprimatur.

Senator **Exon**. Thank you.

C-5 AND C-141

I would like to ask this. With the elimination of the CX, which I was absolutely delighted to see recommendations followed by the Armed Services Committee generally, as I understand it, basically we would plan to move the force that you command through a whole series of transportation systems. That basically was the C-5. Is that essentially correct?

General **Kingston**. The C-5 and the C-141, yes, sir. And if the President calls up the civilian reserve.

Senator **Exon**. Are you satisfied with the purchase program for the C-5's as outlined in the President's budget? Is it adequate?

General **Kingston**. This is a personal opinion, sir. I think it is a step in the right direction, and what you may determine is adequate and what I may determine is adequate obviously may be different. I say that because my mission is to flow that force I have rapidly against the threat.

To Senator Byrd's question I said that I would have at least a minimum amount of warning time. The criticality of deploying that force in that time depends, of course, on the number and type of aircraft and against what opposition, if I have opposition.

Senator **Exon**. Let me phrase the question another way, then. From your personal opinion, and it is always dangerous to ask a military person how much they need because I know we kind of open ourselves up, but how many more C-5's or other transportation-type aircraft would you like to see added and in what numbers, if you had your choice, to carry out your mission at the reasonably earliest possible day?

General **Kingston**. I think, Senator, the program will give me that capability in the out years in a reasonable time.

Senator **Exon**. Mr. Secretary, there were several questions about how we would operate and where we would operate and if we are going to use C-5's. Of course, we have to have some kind of acceptable landing strip and transfer into other more regional aircraft. How does the proposed base at Ras Banas fit into your plans, and where are we on that, if you can answer that question in open session?

Senator **Cohen**. If you would qualify that and not call it a base, I think it might be better. Facilities.

Senator **Exon**. Put whatever qualification you want on it. An area of the world.

Senator **Cohen**. Senator Exon, I think the key word is facility.

RAS BANAS

Mr. **West**. Senator, the first dimension of our preferred strategy to deter a Soviet overt aggression is to be able to move forces quickly into the region to show them that we are in a posture to challenge them. Ras Banas plays critically because it is one of the most important points of debarkation from our strategic airlift onto our tactical airlift. We have a healthy request in the fiscal year 1983 budget for Ras Banas to have the capability of moving swiftly in there in a bare-based mode, moving in up to a division and several fighter squadrons. From there, they then could be moved, especially the land forces, by intratheater lift and not have to continue to use our strategic airlift.

So Ras Banas is probably one of the key places in Southwest Asia where we plan to do that.

Senator **Exon**. I had assumed it was. I also assumed that we would have grave difficulties trying to land C-5's there with the present facilities.

Mr. **West**. Yes, sir.

Senator **Exon**. When do you expect, if you get your money, we might be able to construct something that could land C-5's there?

Mr. **West**. Do you have any idea?

Admiral **Bigley**. I would prefer to answer that in closed session, Senator Exon.

Senator **Exon**. Thank you.

Possibly, Mr. Chairman, this would be asked in closed session also. Maybe you can answer it in open session.

If there would be a sudden, all-out attack by the Soviets, a coordinated attack in Saudi Arabia, for example, what would be the mission of the present deployed fleet in the Indian Ocean? Can you answer that in open session? There must be some plan in the case of such an eventuality.

Mr. **West**. The only reason I am hesitating, Senator, is I wonder how explicit we wish to get in open testimony.

Senator **Exon**. I agree. I will ask it again in closed session.

I thank the Chair.

Senator **Cohen**. One followup question. As far as the facility at Ras Banas—would that be endangered, in your judgment, if Sudan were to be destabilized or overthrown, and a pro-Marxist regime were installed?

Mr. **West**. Depending upon the kind of aircraft that then were flying out of the Sudan, yes, sir. Of course, Egypt itself would be greatly endangered due to the riparian rights of the Nile.

DETERIORATION OF SUDAN

Senator **Cohen**. One of the major points made to me on that trip, especially in Egypt and Oman, was the concern that the situation in Sudan was deteriorating, that we were not doing enough to prevent that deterioration, and that it would pose a grave threat not only to Egypt but to whatever access we might desire to the Red Sea itself.

What are we doing?

Mr. **West**. We greatly increased both our economic assistance and our military assistance to the Sudan, Senator. We felt that the economy was the essence of the issue, not the fear of an overt invasion of the Sudan. We had to do something in terms of assisting with the economy, probably first and foremost, and second, a modest increase in their military capabilities. But our basic thrust has been toward the economy of the Sudan.

Senator **Cohen**. Was it your assessment that the Sudan was being punished by so-called moderate Arab States for supporting Camp David? Is that why Mr. Nimeri's regime is in some difficulty?

Mr. **West**. No, Senator. I believe that there are many variables affecting that. It certainly would be helpful if there were more cash coming forth from nations that are richer to support the Sudan.

Senator **Cohen**. I would agree with that, and I would say that Saudi Arabia should be among them first, but I do not see that taking place.

You can respond if you would like.

Mr. **West**. No.

Senator **Cohen**. Senator Levin?

Senator **Levin**. Thank you, Mr. Chairman.

Relative to Ras Banas, I have a few questions on that also. Apparently congressional actions hampered construction of the facilities at Ras Banas. I am wondering if you could tell us just how important those facilities are to accomplishing the RDF mission, whether or not in your opinion it should be necessary that we have a formal "bases" agreement or facilities access agreement signed before that money is appropriated by the Congress.

General **Kingston**. Senator Levin, if I may, I will answer part of that question and defer it to the JCS representative. I think it is important that we have a multiplicity of bases. It is my understanding that Ras Banas will be a peacetime base where my forces can conduct combined operations exercises with Egyptian forces; RDJTF forces are not to be permanently stationed there, except for caretaker forces.

That mission, I think, is important, as we learned on our recent Bright Star exercise. The more military interchange and cooperation and planning and execution and combined exercises that we have, the better off we will be. The importance of the base as a staging base is very important, as Secretary West brought out, as an intermediate staging base and transfer base for forces until we can project where they may have to go.

I think it is very important, for the reasons I have stated, to the preparation and continued enhancement of my forces working in that area in the region and to be able to go there to exercise with the Egyptians, as we learned on Bright Star. We also had combined operations with the Egyptians and the Sudanese, and if the political climate were right to allow that, I could see that happening in the future.

As to the other, I will pass, if I may.

SIGNED AGREEMENTS

Admiral **Bigley**. Senator, while written agreements are certainly preferred, sometimes a verbal agreement is all we can get. The Egyptians have indeed offered the use of that facility for us, and even with a written agreement, I cannot help but think of some of the agreements we had with our NATO allies in years past for use of their airfields for support of the Israelis during the Arab-Israeli conflict and being denied them.

But while written agreements are certainly preferred, I do not think that that should preclude us from continuing on to get the construction going.

Senator Levin. Why do you think the Egyptians are reluctant to sign a written agreement?

Admiral Bigley. I would prefer to answer that, if I may, Senator, in a closed session.

Senator Levin. Do you believe that the risks to U.S. security in terms of our reduced military capability in the Persian Gulf because of the delays in construction of that base at Ras Banas outweigh the financial risk to us from all these present possibilities that we might be thrown out at some time after we have improved the facility?

Admiral Bigley. I think the threat in the Southwest Asia region, as Secretary West has described, whether it be internal instability or intraregional conflicts, are probably the most likely; but perhaps the most serious but least likely, a Soviet invasion, requires us to be able to put together a deterrent force capable of responding in that area to protect vital U.S. interests as soon as we can, and any time that we delay construction of facilities merely prolongs the time when we can have a credible deterrent in the area.

Senator Levin. I guess I will ask the Secretary, do you think the risk of our being thrown out is significantly less if we have a signed agreement than if we don't? At this time the risks are slight, I believe, in any event, but are they greater risks if we don't have a signed agreement?

Mr. West. Given, Senator, what I know about the climate in Egypt today, I would say no.

Senator Levin. Let me just say this. I had a long discussion with President Sadat about this issue, and I would be happy to share that wisdom of President Sadat on this issue—as to why we should not insist on a signed agreement—with the House committee if that is appropriate. I totally agree with this analysis that it is not wise for us to force that issue. It does not add to our likelihood of staying there. It reduces the likelihood that we will be able to build the facility, and I would be happy to share that with the House committee because I think that is where the problem was, if in your decision it would be of value to them.

On the question of the internal subversion as a threat to us versus Russia's intervention in the Persian Gulf, let me ask you this question, General. In the last few months have you gotten any change in directions to you in terms of what are the greater risks, in terms of the greater threat, in terms of how we ought to be prepared to move? Has there been a shift in our policy that has been transmitted to you that states the threat now is greater from internal subversion to nations in the region than it is from external threats to those nations?

General Kingston. Transmitted to me?

Senator Levin. Yes.

General Kingston. No, Senator. I am still progressing with my regular plans. I have been given the sequence in which to produce those plans by the JCS.

INTERNAL SUBVERSION

Senator Levin. We did read in the paper the 15th of February that the administration is redirecting its military efforts in the

Middle East in the belief that internal subversion is more of a threat to friendly countries, than is a Soviet attack. That report said the Rapid Deployment Force commander is charged with finding ways to enable American forces to make a stand in the Persian Gulf against the Soviets, and has recently been given the additional task of of assessing ways to combat subversion by lesser powers in the Indian Ocean theater.

And you are saying there has not been any recent change in the directions to you?

General KINGSTON. I have a series, and we will get into this further in the classified discussions if you desire, Senator, but I have been given a series of postulated threats that we are preparing plans against.

Senator LEVIN. Has there been any change in that in the last 6 months?

General KINGSTON. No, sir, there has not.

Senator LEVIN. Thank you, Mr. Chairman.

General KINGSTON. That has reached me, Senator.

Senator LEVIN. I better follow that up. Do you know if it has reached anybody else? [Laughter.]

General KINGSTON. No, sir. When I say me, I mean speaking for the Force.

Senator COHEN. It has not reached you very rapidly yet.

Mr. WEST. Can I make an observation on that, Senator? As I indicated in my testimony, there are certain threats that the preferred instruments of policy are not the RDJTF. For the most decisive one we are talking about, subversion that is aided and abetted by external powers, our preference is not to look toward the RDJTF but to look toward such things as security assistance.

STATUS OF MEMORANDUM OF UNDERSTANDING

Senator COHEN. In response to the Israeli annexation of the Golan Heights, the administration canceled the so-called MOU, memorandum of understanding. I would like to know what is the status of the MOU. Do we intend to reactivate it? If so, when? If not, what role do you foresee, if any, for the Israelis to participate in the defense of the Persian Gulf?

Mr. WEST. Senator, the Strategic MOU was suspended by President Reagan. It is still in a state of suspension. The only thing I can say is that when the climate is right, I would expect after a meeting of our National Security Council, the issue will be addressed. But it was a Presidential decision.

Senator COHEN. What about the Israeli role, if any, in the Persian Gulf?

Mr. WEST. The basic concept of a Soviet invasion leads to, as I indicated, how we would prepare globally. The first task along the Mediterranean littoral that has been identified by the Chiefs, and in closed session they may want to get into it more, is to insure a secure line of communication to the eastern Mediterranean. That is the most pressing task and one which has had the Chiefs concerned for several years. So our primary discussion would be toward that task and mutual sharing of that task, Senator.

Senator COHEN. Senator Hart?

GEOGRAPHICAL MISSIONS OF THE RDJTF

Senator Hart. Mr. Secretary, I take it from your testimony and the background we have received on the Rapid Deployment Force in the past that certainly its principal mission is what you have described as the region of Southwest Asia or the Persian Gulf area. Does it have other geographical missions in other parts of the world?

Mr. West. Sir, could I ask the JCS to comment on that?

Admiral Bigley. The decision was made, Senator Hart, that the Rapid Deployment Joint Task Force would focus its attention on planning for Southwest Asia. As General Kingston has said, his forces could be deployed elsewhere other than the Southwest Asia area under the command of the Commander-in-Chief, U.S. Readiness Command at MacDill Air Force Base, who is tasked with putting together joint task forces or forces which could be employed in areas not under the command supervision of already designated unified commanders such as CINCLANT, CINCPAC, or CINCEUR.

As an example, Africa is not assigned to any specific commander. If there were a contingency in Africa, the commander of the Readiness Command could take the forces that are assigned, if so directed through the Joint Chiefs of Staff by the National Command Authority, and put those forces together under a separate joint task force commander, or he could, because of the close association which General Kingston has with those forces which are already assigned to him, General Kingston could indeed be designated as the commander of that joint task force.

So, even while the planning is focused on Southwest Asia, the forces could be used elsewhere.

Senator Hart. Well, Admiral, with all due respect, you have given me kind of a bureaucratic answer to a policy question. I understand how commands work. My question to the Secretary was, does the Rapid Deployment Force have other missions than the Persian Gulf Southwest Asia, not can they be used somewhere else, and if so, how does the command structure work?

Does this administration envision the Rapid Deployment Force being used in any other part of the world? Does it have a mission anywhere else besides the Persian Gulf? That is a policy question.

Admiral Bigley. Worrying about giving a bureaucratic answer, which I do not think it is, the planning for Southwest Asia is the prime mission of the Commander, Rapid Deployment Joint Task Force. But, as the Secretary of Defense has said, that does not preclude his being available to be utilized in other areas if directed, even though the planning to date has been exclusively focused on Southwest Asia.

Senator Hart. All right. I will go back to the Secretary again and ask if you or the administration envision a circumstance in which that capability could be used in any other part of the world, understanding what its prime mission is.

Mr. West. Well, the basic answer is, yes, sir, because hypotheses and scenarios can be multifaceted, but the prime mission remains Southwest Asia; but one can imagine other circumstances that would change. General.

General Kingston. I concur.

Senator **Hart**. I talked to some knowledgeable people in the last few days who are knowledgeable in the area of oil prices and oil supplies and energy—generally in the eighties and nineties. I have strongly, through the last 4 or 5 years, criticized our continued reliance on Persian Gulf oil for economic and national security reasons, particularly given the resources we have in this country.

I am told by those knowledgeable people that anywhere from 1 to 5 years from now there will be an enormous petroleum glut in the world. The price of oil internationally will be well below $20 a barrel and stay there, that the crisis that will occur in the Middle East is not that the Russians will want Persian Gulf oil, but that the producers of that oil can't sell it anythere, and that there will be little, if any, economic interest by this country in that region.

That being the case, what would the Rapid Deployment Force do? Or be ready to do?

Mr. **West**. Senator, I cannot address the accuracy of that prediction.

Senator **Hart**. Assume it.

Mr. **West**. That is at variance with the standard wisdom.

Senator **Hart**. I understand.

Mr. **West**. I would prefer not to answer a hypothetical situation to that extent. I would observe that our concern over the Persian Gulf has been a concern because of the interrelated economies of the industrialized West, not a concern solely of our own petroleum independence. Even as our dependence on the Persian Gulf has dropped significantly, one could not with equanimity assume that there would be economic prosperity in the West if the Soviets had hegemony over the area, even if we were not so dependent on it.

The hypothesis that the industrialized West as a whole within 5 years will not be dependent for economic prosperity on oil from the Gulf is such a different kind of hypothesis that all I can say is, that is the first time I have heard it.

RDF AN ASSET OF INDUSTRIALIZED WEST

Senator **Hart**. Is the Rapid Deployment Force an asset of the industrialized West?

Mr. **West**. To the extent, Senator, that the forces of the United States, because we are the leader of the West, are designed to be used in conjunction with our allies to have a concept of forward defense of the free world, I would say yes.

Senator **Hart**. Does any other nation that falls roughly under your understanding of the term "industrialized West" have a Rapid Deployment Force or anything like it?

Mr. **West**. Several of the other nations of Western Europe, Senator, have forces which they can, and which we have seen, move quite rapidly over great distances.

Senator **Hart**. Are we training with those forces?

Mr. **West**. Well, Senator, in NATO, of course, we are training all the time. At sea, there is substantial training, as well as coordination on a worldwide basis.

Senator **Hart**. Is the Rapid Deployment Force training with those Western industrialized, rapidly mobile assets, invasion forces?

General **Kingston**. No, Senator, we are not at this time.

Senator **Hart**. Mr. Secretary, what would be the policy of the administration if in the near term this country was—not for its economic and national security—dependent upon petroleum from the Persian Gulf, and yet a major supplier of that petroleum were to be interrupted or disrupted or cut off, with regard to the deployment of the Rapid Deployment Force in that region?

Mr. **West**. Senator, the question was more sophisticated than I can keep up with.

Senator **Hart**. I will repeat it. What is the policy of this administration in the foreseeable future if this country is not—in terms of our economic or national security—dependent upon supplies of oil from the Persian Gulf and a major supplier of that oil, a major supply is disrupted or cut off, in term of the deployment of the Rapid Deployment Force?

Mr. **West**. Senator, I really could not answer that question, because it is a hypothetical question that starts with a hypothesis that is so different that it would require a basic reassessment.

Senator **Hart**. Is there anyone in the administration who could answer it?

Mr. **West**. Yes, sir. I would assume that the Secretary of Defense and Secretary of State could answer it after they looked at that hypothesis.

PERSIAN GULF OIL

Senator **Hart**. Well, I think my time is up. Clearly, Mr. Chairman, what I am interested in is whether anyone in the administration has thought through the circumstances which question basic assumptions, namely, that we are going to continue to rely on Persian Gulf oil for the indefinite future, and that is our policy—we don't, by the way, have a policy of independence now—and that we are preparing to fight for that oil.

If in fact the assumptions are incorrect, and we need not, whether we shift back to a policy of independence or world energy circumstances, suggest that we need not depend on that oil, whether in fact the Rapid Deployment Force which we are continuing or which we are now being asked to continue to invest quite heavily in becomes unnecessary for that purpose.

Senator **Cohen**. I think before the administration could be called upon to even consider that as a hypothesis, we ought to know the source of those who are predicting that oil will decrease to $20 a barrel, that this country will no longer in the reasonably foreseeable future be dependent upon Persian Gulf oil, because it does run counter and contrary to everything that I have heard from all of our intelligence agencies. At least I have been told this year—I have heard nothing different—that they are actually projecting the cost of oil considerably higher and almost double what it is today.

Senator **Hart**. It is not going down rather sharply.

Senator **Cohen**. That may or may not be a long-term trend, but I think it is important before these people or anyone in the administration could respond to that to be sure that the people you have been talking to are in fact knowledgeable and it is in fact a reasonable hypothesis. Other than that, I suppose they can only speculate as to what the future is going to be and whether we should continue to build the Rapid Deployment Force. Should we invest money in RDF if in fact the Western Europeans are going to be dependent upon Soviet gas as opposed to Persian Gulf oil? Or whether Japan should be asked to increase its own resources or assets to pick up the burden of defending the Persian Gulf oil if in fact the United States is no longer dependent upon it?

I think those are major policy questions which should be looked at, but they also should be considered in a climate of a reasonable hypothesis. If it is, then obviously the administration should be considering it.

Senator **Hart**. Well, further, I would add that it seems to me we ought to find out what the policy is with regard to the use of American intervention forces on behalf of someone else's economic interest. What I am hearing here today is essentially what I have heard for the last year or two, and that is that our policy is to intervene on behalf of European nations for their supplies of oil even if we don't need them.

Senator **Cohen**. I think that has been the policy adopted by the last administration and one that has been continued by this one.

Mr. **West**. If I could clarify a little bit, Senator, I believe that the issue was that the industrialized economies of the West as a whole are so interelated that even if ours were not as directly and heavily involved as those of Western Europe, that our standard of living could not be continued at the current standard if those of Japan and Western Europe collapsed.

Senator **Hart**. Well, certainly, but I think the question ought to be posed to the American people that way, because they might form some different judgments. I find it interesting that we are not presently training with whatever possible intervention forces our Western industrialized allies have, even though we are counting on them to be able to fight or be willing to fight for their own oil. If that is part of our basic premise, then it seems to me we might think about changing our training doctrines.

Senator **Cohen**. I respectfully suggest that I don't think we are counting on the Western European allies of the industrialized nations to fight for Persian Gulf oil. You raise a very sensitive issue, since I have to address a group on Monday about burden sharing. That does in fact raise the issue: To what extent should the American people be required to fund a Rapid Deployment Force which in essence defends an area of the world in which Europeans and the Japanese have a far greater interest than we do? Is that contributing to the drift toward a nationalistic as opposed to an Atlanticist view within the State Department, the Defense Department, and so forth?

I think those issues are coming up whether we like it or not.

Senator **Hart**. As important as funding is, it is not nearly as important as American lives. The Secretary has suggested that even if my possible scenario of independence from Persian Gulf oil for this country were the case, our Western industrialized allies would still be dependent. Therefore we would have some military obligation to make sure that they got their oil. When questioned, I would suggest that they also have assets that are capable; maybe they are not willing to commit these assets. Yet we are not training to operate with those assets.

Senator Cohen. Well, without belaboring this particular debate, I can look at this map and say that assuming everything you suggest is true, that in the 5 years even if we are reasonably independent of energy from the Persian Gulf, I think interest would shift south and the focus might shift very well down to near South Africa, which I still view as a future Persian Gulf of sorts. We have a very heavy dependence upon the minerals and resources of that area of the world, and we might very well be required to exercise some capability to intervene some time in the future, independent of any action by the Europeans at that point.

Senator Hart. Against whom?

Senator Cohen. We don't know at this point. It might be a Soviet threat into South Africa.

Mr. West. Just to clarify a little bit, Senator, I hope I didn't leave the impression that I accepted the hypothesis that we would be independent of the Persian Gulf oil. I indicated that if that were the case, clearly we would have to address it, but your data are at great variance with the data upon which we have been operating.

Senator Hart. I understand what you are saying, but in discussing the hypothetical situation, you said even if that turned out to be the case, we still would have Western industrialized allies who will be dependent on this oil. So then I was trying to pursue the issue of what our policy would be, at least under this administration, of military intervention on behalf of someone else's economic interest, and whether or not they were prepared to make the same kind of commitment.

Mr. West. Well, the fundamental facts may be that over the next several years, our relative dependence upon Persian Gulf oil may decrease somewhat, and the extent to which that would adversely affect our economy as a whole were this to go under Soviet hegemony cannot be split apart from what the effects would be on the rest of the industrialized West, and the spinoff of that back upon our economy. This is all on bundle that has to be looked at as a whole.

Senator Hart. What if it fell under Sunni Muslim hegemony?

Mr. West. I think there are many different hypotheses.

Senator Cohen. General, Senator Exon asked what would you need over and above what you have requested, and your answer was quite diplomatic. You said, I have enough within the budget request. That is not the question I wanted to ask you.

RDF BUDGET PRIORITIES

What if the mood prevails in the Congress today and we cut the budget, the defense budget? I would like to know what your priorities would be with respect to the following items: airlift, sealift, amphibious lift, maritime pre-positioning, light armored vehicles, military—the next three items are not within the jurisdiction of this subcommittee, but it is important for us to know—military construction in the region, operating tempo in the regional forces—and, Admiral, perhaps you can comment on that—and security assistance.

With respect to those items, I notice the graphs, and I can see where the dollars are going, and I assume that probably reflects your priorities; but, assuming cuts were made and you had to accept some cuts, what would be your priorities as far as the allocation of resources to those specific areas?

General KINGSTON. Mr. Chairman, in all due respect, I think I would be told what my——

Senator COHEN. Well, you would have some recommendations, though.

General KINGSTON. I believe I would. Yes, sir.

Senator COHEN. What I am asking is, what would your priorities be in terms of your assessment of the needs? Assume we have an RDF, and assume for the moment we are going to remain committed to defending the Persian Gulf, that oil is not going to go down to $20 a barrel, and so forth. Where do you place the priorities in terms of the actual needs of the RDF?

STRATEGIC AIRLIFT AND SEALIFT

General KINGSTON. Without knowing the size of the cuts, without knowing obviously where they would be directed, my personal views would be that if we had to, they would leave as much in the budget as possible for strategic air and sea lift, and also—and again I am getting into someone else's area, but military construction within the area, because I must have bases to which to flow the force if I am still to accomplish my mission, both staging and intermediate staging bases.

Senator COHEN. So even though the Soviet threat is the least likely, but also the most dangerous—nonetheless, it seems to me what you are doing is placing a priority on strategic air and strategic sea.

General KINGSTON. That is correct, sir, and I would follow it up with amphibious. Again, I would be glad to provide a statement for the record if you so desire.

Senator COHEN. I have a number of questions. I think that we need to go into executive session. We might break for a minute so you can get up and stretch, and then we will go directly into executive session. Do any other Members want to ask questions before doing that?

Senator Hart?

Senator HART. Mr. Chairman, clearly the area of my hypothetical concerns doesn't concern anyone else, so I will reserve.

Senator COHEN. It is not necessarily so that it doesn't concern anyone else. I think I would like to have access to your informed sources, because I would be very interested in having the Pentagon consider the reality of such a situation. Do you need an RDF or a separate RDJTF under any circumstances? Do you need it in the Persian Gulf? If not the Persian Gulf, in the Caribbean? And if not in the Caribbean, do you need it for any other part of the globe?

Senator HART. Or, do you need Americans perishing on the beaches of the Persian Gulf for West German oil? I understand Secretary West's global economic scenario that it hurts our economy if the Japanese can't sell us televisions, but it seems to me primarily a Japanese concern and secondarily an American concern.

Senator COHEN. I don't think the question you raised, are we ready to die for Danzig, is the issue. I don't think it is only a question of whether or not we buy so many television sets or Mazda RX automobiles. I think the further question is, to what extent would Japan come under Soviet hegemony, and what threat would be posed if Japan became part of the Soviet sphere of influence? Does that pose an additional threat to our security?

I think all of those issues are involved.

Senator HART. Well, clearly, also, everyone else seems to want to talk about Soviet hegemony. I am equally concerned about indigenous revolution and lots of other aspects. I don't see the Soviet Union as the only threat in the region, even if one were to grant that it is the principal threat.

Senator COHEN. And I agree with you. In fact, you and I have talked about this for the last year, and I think the administration is finally coming to that viewpoint, and has moved to that viewpoint. We are talking about the very real prospect of internal subversion. To what extent do we ignore that? Iran was a classic example, I suppose. If Iran should turn the tide and start to prevail over Iraq, there is very serious concern among same other governments that a Shiite revolution might be stirred in their countries as well. To what extent should we be concerned about that? I think we should be concerned about it.

To what extent does the Rapid Deployment Force serve as a deterrent in that part of the world, preventing various conflicts from taking place? To what extent does an over-the-horizon capability and presence help deter that sort of stirring to revolution? I think it serves a function. If not, perhaps we might as well pack up our bags and go away.

Senator HART. I wish we could engage Secretary West in this dialog. [General laughter.]

You and I can carry it on very well.

Senator COHEN. Well, why don't we declare a 5-minute recess, and then we will go into closed session?

[Whereupon, at 3:35 p.m., the subcommittee was recessed, to go into executive session.]

EXECUTIVE SESSION

Senator COHEN. The committee will come to order. Is everyone in the room now cleared to be here?

Mr. Secretary, one thing I wanted to say with respect to Ras Banas is that during my trip to Egypt, it came to my attention that one Member of the House, on the Appropriations Committee, had suggested to the President of Egypt that he and we should look more closely at [deleted] as a facility, as opposed to Ras Banas.

I took it upon myself, speaking only as one Member of the Senate, to discourage any further consideration of that issue. It was recommended that President Mubarak look at this option because it might save us some money—it would be cheaper to make improvements at [deleted] instead of Ras Banas.

I think that if we look at [deleted.] I do not know what the Department of Defense's attitude is. I would be interested in hearing yours.

Mr. **West**. Senator, President Mubarak did raise this with us about a month ago. He asked Secretary Weinberger and General Jones, would they look at [deleted] versus Ras Banas, but he indicated he had no strong preference.

Admiral **Bigley**. If I may, sir, the Joint Chiefs of Staff have reviewed it and have weighed the costs of both places and also the advantages and disadvantages, and it comes clearly out Ras Banas. There is not any dollar savings in [deleted] over Ras Banas. But that is not the only reason.

Senator **Cohen**. You have other problems—the visibility.

Admiral **Bigley**. [Deleted.]

Senator **Cohen**. I am delighted to hear that. I took it upon myself to discourage any pursuit on the part of President Mubarak. He at that time was quite flexible, saying whatever you decide, but my instinct told me that it was the wrong decision, to be looking at [deleted] for all the reasons you have just cited.

General Kingston, what are your views about [deleted].

General **Kingston**. Mr. Chairman, I think it is [deleted].

[Deleted.]

The presence in the area will show United States resolve. Conversely, it will show [deleted].

Senator **Cohen**. [Deleted.]

General **Kingston**. I have given the Joint Chiefs of Staff a [deleted]. They are still working out the problem at this time, Mr. Chairman.

The main function, as I see it, [deleted].

[Deleted] the Rapid Deployment Joint Task Force, will enhance our capabilities and coordination, I believe, with the military within the area.

Senator **Cohen**. Do you have the funds in the current budget [deleted].

General **Kingston**. No funds at the current time, no, sir.

Senator **Cohen**. What is the feasibility of [deleted].

General **Kingston**. [Deleted.]

Senator **Cohen**. Well, let me just suggest that I received a different impression from the people I talked to [deleted].

General **Kingston**. Mr. Chairman, I got the same impression from talking with the military and political leaders of the four countries during Bright Star 1982 last November and December. [Deleted.]

Senator **Cohen**. Admiral Bigley, perhaps you could tell me, what would be the geographic boundaries of this command?

Admiral **Bigley**. The geographic boundaries, as currently envisioned by the Joint Chiefs of Staff, and I must caveat that this has not been approved yet as part of the unified command plan, which the President himself would have to approve: [deleted].

Senator **Cohen**. In essence, what you are saying is they [deleted].

Admiral **Bigley**. That is correct.

Senator **Cohen**. The problem I have is [deleted].

Admiral **Bigley**. As you well know, Mr. Chairman, it is a large area and Diego Garcia is 2,000 miles from the Strait of Hormuz. [Deleted.]

It is not just a case of operating ships. It is the logistic support that you are concerned about. [Deleted.]

The plan is for those forces [deleted].

Senator **Cohen**. When you have India and Pakistan in a confrontational status, [deleted].

Admiral **Bigley**. Well, you could extend it a good deal further to [deleted].

Senator **Cohen**. Well, for the two countries that are directly confrontational, then; [deleted].

Admiral **Bigley**. I do not believe so, Senator. You have a pretty large area right now for a new unified commander, and the unified command plan is periodically assessed by the unified commanders and by the Joint Chiefs of Staff and the Secretary of Defense and the President. I think as the command evolves itself into separate command statue by the first of January 1983, it may well be that one day you would see an expansion of the area. [Deleted.]

That is part of the problem.

Senator **Cohen**. What about [deleted].

Admiral **Bigley**. The focus is primarily on, of course, the oil of Southwest Asia, [deleted].

Senator **Cohen**. [Deleted.]

Admiral **Bigley**. [Deleted.]

Senator **Cohen**. I am not sure that what you just said was not terribly important to this whole issue. In other words, what you are saying is, [deleted].

Admiral **Bigley**. That could be a political consideration, I am sure. But oil and the Soviet threat to Southwest Asia was the prime focus for the Commander-in-Chief of Southwest Asia, [deleted].

Senator **Cohen**. What is going to be the relationship of the commander of the Middle East force to CINCSWA?

Admiral **Bigley**. [Deleted.]

Senator **Cohen**. Do you have any role for him?

Admiral **Bigley**. He still has the presence role in the Persian Gulf and in the Middle East area, [deleted].

Senator **Cohen**. I yield to Senator Byrd.

Senator **Byrd**. Let me ask just two questions. General Kingston, to the extent that our primary concern with the Southwest Asia region shifts from large-scale conflict with the Soviets to protection of friendly governments from internal threats, would the priority placed on airlift increase as speed of response becomes a major factor?

General **Kingston**. Senator Byrd, depending on the type of threat and the type of assistance, the amount of airlift [deleted].

C-5 AND KC-10

Senator **Byrd**. Secretary West, a good deal of debate surrounded the decision to procure additional C-5 and KC-10 aircraft for airlift augmentation. What ultimately became the key points of decision in preferring this mix of aircraft to others?

Mr. **West**. I do not know, Senator. I was not a participant to the decision on the procurement.

Admiral **Bigley**. I cannot answer that question either, Senator.

Senator **Byrd**. I suppose maybe one of you could get someone to answer it for the record.

Thank you, Mr. Chairman.

[The information follows:]

AIRLIFT AUGMENTATION DECISION

The decisive factors were available monies and early delivery. As the fiscal year 1983 budget process drew to a close, it became certain that fiscal consideration would permit doubling the funding for airlift in the near term. It then became clear that C-5 and KC-10 procurement would permit earlier reduction of a significant airlift shortfall.

The C-5 delivers the most outsize capability, soonest and at less program cost than the C-17. For example, by the end of fiscal year 1987, we will have delivered 17 more C-5's than we could have delivered C-17's with total program concurrency, and will have 3.8 million ton miles per day more capability. The KC-10 can carry cargo, extend the range and payload of the C-141 and C-5 through aerial refueling, and can deploy tactical fighter squadrons by carrying personnel, equipment and simultaneously refueling the deploying aircraft.

We still plan to pursue a C-17 in the future. We are continuing R&D efforts and will strive to procure airlift to complete the CMMS recommendations for required ton-miles/days. We will be seeking an operational capability in the early 1990s when we must consider replacing some of the C-141s and C-130s. Also, we will be looking for new airborne command and control aircraft and Marine Corps tankers.

Senator **COHEN**. Senator Hart?

Senator **HART**. General, you just said that [deleted] in the instance of an internal threat, and Secretary West indicated that one of the four primary defense security goals designed to support achievement of our foreign policy in the area is to support moderate states against internal disorders and subversion. [Deleted.]

Mr. **WEST**. I would like to make it clear that we were talking about internal threats and subversion. The subversion I had in mind was aided and abetted by external aggression, that these do not detract from the necessity of having the RDJTF as our conventional purpose forces sized for a worldwide war against the Soviet Union. That is our force-sizing criterion.

Senator **HART**. I did not ask you anything about the size.

Mr. **WEST**. I understand. I just wanted to make that clear. I would prefer not to get into a hypothesis of what we might do in any particular country internally, except to say if we were requested, we have a variety of instruments that have been discussed before another committee. I believe I could speak later to the Senators, but I believe that the classification is above the secret level. I am willing to talk, but not with this many people.

But there are a variety of instruments, independent of the RDJTF.

Senator **HART**. Let me change the question. This is the Senate Armed Services Committee in executive session.

Leave aside the question of [deleted]. What is the policy of the administration with regard to that?

Mr. **WEST**. Now I feel like I am on much safer ground [deleted]. I believe that there are certain things that clearly are best addressed on a case-by-case basis when and if they do arise, and that the duty of the Department of Defense in part is to insure that it has a spectrum of capabilities that could respond if they were asked to by the President. [Deleted.]

Senator **COHEN**. Let me give you a concrete example. Suppose the [deleted] requested that the United States come in and help [deleted]. Do we have a plan and policy as to what we would do in those circumstances?

Mr. **West**. Let me put it this way, Senator. We could respond, but that would be fundamentally, of course, a decision of the Secretary of State and the President. The role of the Department of Defense should be to have appropriate instruments that could be applied, and I think we do have them.

Senator **Cohen**. Not only the assets, but does the Department of Defense take into account particular types of scenarios? [Deleted] and in fact might very well make a request of the United States. They have not done so to date, but it is clear to me that they might very well request the United States to come in and assist them.

Do we have—I think that is what your question is, Senator.

Senator **Hart**. Well, all that Senator Cohen has done is change the country. That is precisely my question. He likes [deleted] and I like [deleted].

You are the Assistant Secretary of Defense for International Security Affairs. The first page of your testimony says there are four primary defense security goals designed to support achievement of our foreign policy goal in the area, and one is support moderate states against internal disorders and subversion.

Now, what is our policy?

Mr. **West**. Let me say first, Senator, that you have an earlier version of the final draft. The final draft simply added the words "aided or directed by outside powers."

Senator **Hart**. Well, that is fascinating. That is fascinating. Who changed that draft?

Mr. **West**. I did, Senator.

Senator **Hart**. Why did you do that?

Mr. **West**. Basically because our fundamental policy is not that we are tampering with internal regimes, but that we are concerned with external powers interfering with a friendly regime. By that I mean we are concerned with the Iranian threat and the Libyan and the Tripartite Pact, as well as with the Soviet threat.

Senator **Hart**. That is very important, Mr. Secretary. That is very, very, very important, the addition of that language, because what it seems to say to me, and this is about as close as we come to getting a concrete direct policy answer on this, is that if there is internal unrest in the region, even if it might lead to temporary or permanent cut-off of oil supplies, our policy is not to intervene unless there are outside forces.

Mr. **West**. Senator, I am going to sidestep that deliberately because that is a fundamental foreign policy question. I am the Assistant Secretary for International Security Affairs, and I do know basically what we are doing on a case-by-case basis. As I indicated, we do review requests that we receive on a case-by-case basis.

The responsibility of the Department of Defense is to support our foreign policy by insuring that we have the instruments that can be applied if the decision is taken through the National Security Council to apply those instruments.

Now, a specific example that I have in mind is [deleted.] These are all real-life examples. Another one is providing [deleted]. There are one or two other cases. These are all instruments that we have.

Now what happens is that on a case-by-case basis, those requests come in through our Ambassador to our State Department, to our Defense Department.

So I would say that we do not have a blanket policy, but rather we have general guidelines. The general guideline that I think is critical is the relationship to outside powers. Then these are addressed on a case-by-case basis.

Senator **Hart**. Mr. Secretary, I would encourage you, as one member of this committee, to consult with your senior colleagues in the administration to work out some way in which there is much more serious discussion with either this committee or the Intelligence Committee or the Foreign Relations Committee in advance of a possible serious internal disruption in that area, what you might do.

The point I am trying to get at here is the situation in which we were all to wake up at 6 a.m. and find out [deleted,] and that elements of the Rapid Deployment Force were being deployed and that we were all rousted out of bed—not we but Senator Cohen, the chairman of the Intelligence Committee, Senator Tower and other ranking types—to go to the White House to find out what in fact the United States of America is actually doing there.

That is the kind of consultation that those of us who have responsibilities in this area do not find particularly productive.

Now I understand contingencies and vagaries and all of that, but I think all of us are just concerned in this area about likelihoods, that is all, and ex post facto or even simultaneous consultation I do not think is calculated to get the broadest base of congressional support.

Mr. **West**. Senator, I hear you loud and clear and I think what you are suggesting is very sound. I will take that up with Deputy Secretary Carlucci and we will be back in touch.

There is a problem here that has begun to evolve over the past year in that many of the different things we are doing do not fall neatly into one committee, precisely because State, CIA, and the Department of Defense are working very closely together. I will have a discussion with my seniors at the Department of Defense to see if we cannot have a few meetings to explain exactly what all the pieces are.

Senator **Byrd**. Let me ask a question. Mr. Secretary, how important do you consider [deleted] in the scheme of things?

Mr. **West**. It is very important, Senator.

Senator **Byrd**. Very important?

Mr. **West**. Yes, sir. I could ask Admiral Bigley [deleted] to elaborate.

Admiral **Bigley**. Well, from a strategic point of view, [deleted]. It is, of course, as you well know, Senator, [deleted].

Senator **Cohen**. We did that, too.

Admiral **Bigley**. [Deleted.]

I think for the United States, [deleted].

So I think [deleted] is important because [deleted].

Senator **Byrd**. The government [deleted].

Admiral **Bigley**. The government [deleted], as the Prime Minister and Foreign Ministers [deleted].

Senator **Byrd**. You mentioned the Prime Minister. What is that guy's name?

Admiral **Bigley**. [Deleted.] The Prime Minister is [deleted].

Senator **Byrd**. One of them is the most disagreeable man I ever met. [Laughter.]

Senator **Byrd**. I did not like the way they talked about the United States. I told this fellow, you speak against my country one more time and you and I are going to have trouble. This is in the [deleted].

Admiral **Bigley**. [Deleted.]

Senator **Cohen**. Senator Byrd's statements are classified top secret. [Laughter.]

Senator **Cohen**. Our new Ambassador to [deleted]. [Laughter.]

Before yielding to Senator Hart, I would just reiterate to the Secretary the importance of a question like that. A very high-ranking general [deleted] posed that question while I was there. He wanted to know what the policy of the United States was going to be, would we in fact come to the aid of [deleted] in time of crisis. Obviously our State Department was not in any position to comment. I was at liberty to say anything I wanted to, bearing no responsibility for my remarks. But I think it is important that we do get some access to our plans.

Senator Hart?

Senator **Hart**. Thank you, Mr. Chairman.

I have a not quite frivolous question, but I wondered if we should make anything out of the fact that there are no Marine uniforms in this room.

Mr. **West**. There are no Marine uniforms? I will be glad to change very quickly and come back.

General **Kingston**. I have a marine present in civilian clothes.

Admiral **Bigley**. It is all part of one service.

Senator **Hart**. Admiral, I will remember that.

I think I was asking a little more profound question, having to do with command structure and so on. There are those of us who have been quoted as saying we already have a Rapid Deployment Force. It is called the U.S. Marine Corps. I was just wondering whether the array that we see before us indicates some diminished role for the Marines in any way.

FOUR-SERVICE COMMAND

General **Kingston**. Senator Hart, we have had two rapid deployment capabilities for a long time in the United States. We have had the Navy-Marine Corps team and we have had the Air Force, paratroopers, and rangers. I see no diminished role in the RDJTF of the Marine Corps or of the Navy or of the Army or the Air Force. It is the first time in peacetime that this country has put together a headquarters of all four services and components of all four services. I have Army, Navy, Air Force, and Marine components right now. The Navy component commander, if we go to war, would foreseeably be in charge of naval forces operating in support of my command, including the Marine Corps.

If we have an amphibious operation and the marines have moved ashore and the amphibious operation is over, those marine forces would come under my operation and control.

By having a four-service headquarters in existence, by operating in the exercises that we have done, 10 of them over the past 2 years, 3 of which were overseas, and the last one, Bright Star 1982, had forces from all four services including a marine battalion landing. We insure an optional capability, I believe, by providing a Rapid Deployment Joint Task Force for the U.S. Government, and I see no diminishing of any service's role in support of my headquarters.

Senator HART. Thank you, General.

Senator COHEN. I have a number of other questions I will ask for the record. Let us go out and enjoy what is left of this beautiful day.

[Questions with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR WILLIAM S. COHEN

POTENTIAL THREATS TO U.S. INTERESTS

Senator COHEN. The United States has a number of national interests in the Southwest Asia region. Key among these is uninterrupted access to the region's oil resources. There are a number of states in the region that are hostile to the U.S. interests, posing a range of potential threats to U.S. interests.

General Kingston, how would the force requirements for these potential threats differ?

General KINGSTON. Threats posed by hostile states in SWA range from a [deleted].

Senator COHEN. Do you see possible contingencies to which the RDJTF would be asked to respond when access to regional and enroute facilities would be denied?

General KINGSTON. That is always a possibility. However, [deleted].

Any request to assist an ally would most likely include an invitation to use that nation's facilities [deleted].

Senator COHEN. How would you respond in such situations?

General KINGSTON. There are several options available including alternate routing and methods of force deployment. These would no doubt take longer and would be disruptive to our plans, particularly at a time when stability is highly desirable. It is my responsibility to identify to my superiors my access requirements well in advance of the requirement, which I have done.

MISSION PRIORITIES

Senator COHEN. On February 15, 1982, the Washington Post reported in an article:

"The Reagan administration is redirecting its military efforts in the Middle East in the belief that internal subversion is more of a threat to friendly countries, and their oil, than Soviet attack."

How does this shift in emphasis alter the force planning strategy for the RDJTF?

General KINGSTON. The article is out of context. The Rapid Deployment Joint Task Force has been tasked to develop plans for a wide range of contingencies. [Deleted.]

CAPABILITIES AGAINST A SOVIET INVASION OF IRAN

Senator COHEN. The focus of U.S. force planning has been on defeating a Soviet invasion of Iran. The Congressionally Mandated Mobility Study included this scenario. After all of this work, it would be useful to have an assessment of the ability of U.S. forces to defeat a determined Soviet invasion of Iran.

Could the RDJTF defeat a Soviet invasion of Iran?

General KINGSTON. [Deleted].

Senator COHEN. What assumptions do you make about the dedication of mobility forces to the RDJTF deployment to Southwest Asia?

General **Kingston**. The assumptions concerning mobility forces for RDFTF are based on [deleted].

Senator **Cohen**. How do these assumptions compare with the needs of other worldwide U.S. military forces to enhance their readiness during this period of superpower crisis?

General **Kingston**. [Deleted.]

Senator **Cohen**. What assumptions do you make about strategic warning?

General **Kingston**. [Deleted.]

Senator **Cohen**. What evidence do you have to support such an assumption on strategic warning?

General **Kingston**. According to DIA, these assumptions are based on the following factors: [deleted].

Senator **Cohen**. How many support units currently deployed in Europe are considered part of the support available to the RDJTF?

General **Kingston**. [Deleted.]

Senator **Cohen**. How many CONUS based support units available to the RDJTF also have a Europe POMCUS mission?

General **Kingston**. A recent comparison of our plans and those of Europe indicate that there are [deleted] support units available to the RDJTF which also have a Europe POMCUS mission. These are principally combat service support type units with unique missions and capabilities. These [deleted] units are a small part of the RDJTF dedicated combat service support structure.

FORWARD OPERATING ELEMENT

Senator **Cohen**. What locations are being or have been considered for an FOE?

General **Kingston**. The FOE is predicated on three basic criteria: [deleted]. The adequacy of the facilities and host-nation support potential of location options was assessed. Location preference in order of priority: [deleted]. In addition, [deleted].

Senator **Cohen**. What would a land based FOE consist of with respect to people and facilities?

General **Kingston**. [Deleted.]

Senator **Cohen**. What is the feasibility of an FOE afloat?

General **Kingston**. [Deleted.]

Senator **Cohen**. Mr. West, what are your views on the need for a FOE?

Mr. **West**. If we were able to place a Forward Operating Element in Southwest Asia, it would be highly desirable. There would be military, as well as diplomatic utility to such an arrangement. We must take into account, however, the political sensitivities of the regional states. They are extremely sensitive to the stationing of foreign troops on their soil. For this reason, at least for the immediate future, we plan to keep the RDJF Headquarters at MacDill AFB in Tampa, Florida.

Senator **Cohen**. If a FOE were be established soon, should it be sea-based or land-based?

Mr. **West**. The options are still being looked at by the Joint Chiefs of Staff and are being discussed within DOD and with the State Department. While we might prefer to have an FOE land-based, that may not be possible due to politicial sensitivities. On the other hand, there are drawbacks to having a sea-based FOE as well. Thus, for the time being, there does not seem to be an optimal solution.

RDJTF FUNDING

Senator **Cohen**. Admiral Bigley, Secretary Weinberger has said that the fiscal year 1983 budget contains $4 billion for the Rapid Deployment Joint Task Force. The Army has indicated that almost no funds have been designated exclusively for the RDJTF while the Air Force and Marine Corps have identified specific RDJTF requirements for which they have given priority funding.

What portion of the $4 billion is allocated to each service?

What programs constitute this $4 billion effort?

Admiral **Bigley**. The $4 billion referred to by Secretary Weinberger was an order of magnitude estimate of that portion of the fiscal year 1983 budget directly associated with the RDJTF.

We do not prepare the budget so as to isolate specific theater or command resource requirements. These dollars are carried in the appropriate functional accounts of the Military Department requests, and cannot be isolated by Service, item, and appropriation structure until all Military Department detailed justification data are complete. The Office of the Secretary of Defense (Comptroller) is currently compiling estimate fiscal year 1983 RDJTF/SWA costs. These data will be provided when they become available.

CONTINGENCY PLANNING FOR THE THIRD WORLD

Senator **Cohen**. When the RDJTF was created, it was announced as a worldwide rapid reaction force. The RDJTF was subsequently directed to focus on Southwest Asia and will soon transition to a unified command. This naturally raises the issue about rapid reaction in other Third World areas. What are the organizational responsibilities for force projection in other Third World areas, including augmentation of CINCs who may not have sufficient forces for certain crises?

Admiral **Bigley**. Current Joint Chiefs of Staff contingency planning provides for possible power projection requirements in Third World areas critical to US interests. [Deleted.]

Senator **Cohen**. Is there a need for organizational and/or force changes similar to that which resulted in creation of RDJTF?

Answer. The JCS continue to monitor developments as they occur throughout the world and changes requirements for contingency planning, as the need occurs. At present, there is no requirement for organizational or force changes.

Questions Submitted by Senator Jeremiah Denton

RDJTF: ESTABLISHING UNIFIED CMD FOR SWA

Senator **Denton**. General Kingston, with respect to rapid deployment you state: "We can have combat-ready Marines ashore in the area within 48 hours, when a Marine amphibious unit is on station in the area." Two questions: Does this statement refer to forcible entry; and how much advance strategic warning is necessary to implement this scenario?

General **Kingston**. Let me first preface my response by explaining that in the scenario we envision for SWA [deleted]. With regards to forcible entry [deleted].

Senator **Denton**. General Kingston, when the RDJTF transitions to a unified command, what will be the aggregate number of troops available to your command for the purposes of planning and employment? Of this total, what percentage of units will continue to maintain primary mission responsibilities in addition to the RDJTF mission?

General **Kingston**. Currently the RDJTF is authorized a total of [deleted] active duty personnel which includes a maximum of 100,000 reserve call-up personnel (PL 96-584) for purposes of planning and employment. Attainment of unified command status will [deleted].

Senator **Denton**. General Kingston. You refer to the need for additional sealift, airlift, and sustainability. Can you outline for the committee what the existing shortfall is, and whether or not you feel the problem is being given proper budgetary consideration?

General **Kingston**. The current strategic mobility delivery shortfall can be satisfied by continuing congressional support for RDJTF airlift, sealift, amphibious lift and pre-positioning initiatives.

Airlift.—As a minimum, we need an additional [deleted].

Sealift.—Fast sealift available at U.S. ports within [deleted].

Amphibious lift.—Additional amphibious lift is needed to transport fleet marines from [deleted].

Pre-positioning.—Initiatives to increase/and enhance prepositioning levels afloat (NTPF) and ashore are being pursued. The prepositioning initiatives reduce gross strategic lift requirements, [deleted] and improve the combat force closure rate over what it would otherwise be if the total force had to be flowed from CONUS.

In summary, the strategic mobility enhancement programs in the budget will aleviate some of the RDJTF current movement shortfalls. [Deleted].

OVERCOMMITMENT OF THE NAVY

Senator **Denton**. Admiral Bigley, in your formal presentation you state that the RDF is "...designated to include up to three carrier battle-groups and more than a division-equivalent of marines." It has frequently been stated over the past year that our naval forces are spread dangerously thin. Many have referred to a one-and-a-half ocean Navy with a three-ocean commitment. Given the President's recent initiatives in the Caribbean Basin, I submit that we are now forcing that same one-and-a-half ocean Navy to fulfill a four-ocean commitment. In light of the force structure of the RDJTF and the caribbean security commitment, would you comment on the need to authorize the President's SCN request and specifically the two CVNs requested for fiscal year 1983?

Admiral **Bigley**. As you perceptively point out in stating your question, our naval forces are stretched thin as our nation continues to rely heavily on the use of naval forces as an instrument of national policy, employing these forces as they were designed to be used in a flexible, mobile, effective manner. Our commitments have grown, and continue to grow, well beyond our traditional interests in NATO and the Far East. Moreover, we must look beyond the needs of our peacetime commitments to the requirements for being able to conduct prompt, effective wartime operations. The present size of our Navy, 490 ships, is inadequate to our present and growing needs. Our margin of superiority over the Soviet Navy has eroded to the point that any reasonable estimate of the naval balance between ourselves and the Soviets falls well within the range of uncertainty. The goal of building a 600 ship Navy is essential if we are to ease the strain on our forces and personnel imposed by the high tempo of operations and if we are to regain the measure of strength necessary to ensure the freedom of the seas for our national purposes. In addition to improving the quantity of ships in our hard pressed operating forces, the new ships contained in the SCN program will enhance our capability to conduct naval warfare in today's highly technical environment, thus improving our qualitative warfare posture as well as our quantitative inventory. Fifteen carrier battle groups are essential if we are to say again with confidence that we have attained a position of maritime superiority. The achievement of 15 carrier battle groups is attainable by 1990 with approval of the two CVN's contained in the fiscal year 1983 budget proposal and the continued service of USS MIDWAY and CORAL SEA. By contracting for two CVNs at the same time, we are aiming for major production efficiencies and hope to shorten the normal seven year production time by about two years per ship through multi-ship procurement. The two CVNs contained in the fiscal year 1983 budget proposal are vital to our ability to carry out present and future commitments with confidence.

EFFECT OF RDJTF COMMITMENT OF OTHER THEATERS

Senator **Denton**. Admiral Bigley, in your summation, you state that ". . . the Rapid Deployment Joint Task Force has the capacity to deploy rapidly a force to the Southwest Asian/Persian Gulf region." Is it not true, however, that at the present time, due to shortages of airlift, sealift, sustainability, and manpower that this capacity will necessarily affect a corresponding drawdown of commitment in other vital mission areas?

Admiral **Bigley**. Yes. Were we to deploy a major force to the Persian Gulf or Southwest Asia (SWA) area, we would have to utilize [deleted] 90 percent of our airlift assets and most of our readily available [deleted]. After initial deployment operations are complete, [deleted] of this capability would also be required to sustain the forces in the field with ammunition, spare parts, supplies, and replacements. Plans to reinforce NATO, which include the security of sea and air LOCs, [deleted]. However, even with this level of commitment, [deleted] NATO reinforcement goals. Therefore, with current mobility force levels, a [deleted] NATO.

Our ability to sustain a major force deployment to SWA would necessitate [deleted] depending on the size of the force deployed.

Any deployment of forces to SWA will decrease the level of forces available to respond in other areas and [deleted].

Questions Submitted by Senator John W. Warner

CHEMICAL CAPABILITY

Senator **Warner**. What do you regard to be the state of preparation of forces designated as elements of the RDJTF to conduct military operations in a chemically contaminated environment?

General **Kingston**. Based on our recent evaluation, the state of preparation of those forces designated as components of the RDJTF to conduct military operations in a chemically contaminated environment [Deleted].

Senator **Warner**. What do you think are the prospects of them (RDJFT Forces) having to do so in a combat situation instigated by the Soviet Union or its proxies?

General **Kingston**. It is speculative to judge the prospects of any particular combat situation. [Deleted].

Senator **Warner**. How would you rate those forces' chemical defensive posture today? How about that of units designated to augment your assigned units in the event of war and/or mobilization? How long could your forces maintain an effective chemical defensive posture and at what cost in terms of operational readiness/combat effectiveness?

General KINGSTON. I would rate the chemical defensive posture of RDJTF forces as [deleted].

Senator WARNER. What is your professional judgment about the degree to which further improvements to our chemical defensive posture alone can be relied upon to deter the Soviet Union or its allies from initiating chemical attacks upon American personnel?

General KINGSTON. [Deleted]. A balance in offensive and defensive capabilities has historically acted as a deterrent to CW use by either combatant.

Senator WARNER. To what extent do you believe that a credible retaliatory capability is essential to an effective chemical deterrent? How would you characterize the present U.S. chemical stockpile and its availability and utility to you as the RDJTF Commander in the event you should be compelled to use chemical weapons to respond to their use by the enemy?

General KINGSTON. A credible retaliatory capability is the essential element in a credible chemical deterrent. The Administration's program to modernize the U.S. retaliatory stockpile is fundamental to attaining this capability. [Deleted].

Senator WARNER. Is it your professional military judgment that binary munitions would provide significant and needed improvements to our present chemical deterrent capability especially in view of their safe and easy transportability—and that the introduction of these weapons is an urgent national defense priority?

General KINGSTON. Yes. Binary munitions are preferable to current type munitions, because they can be more easily moved forward in times of crisis; do not present a hazard if damaged in transit or by enemy attack; and provide significant safety and logistical advantages throughout the manufacture, storage, use, and eventual disposal sequence.

CHEMICAL CAPABILITY

Senator WARNER. Do you believe that, under present circumstances of U.S. chemical unpreparedness, you would be compelled to advocate the use of nuclear weapons to respond to a Soviet or Soviet-proxy attack which employed toxic chemical agents?

General KINGSTON. [Deleted.]

QUESTIONS SUBMITTED BY SENATOR HARRY F. BYRD, JR.

RDF FUNDING

Senator BYRD. Admiral Bigley, in the fiscal year 1983 budget, does $4 billion represent the maximum allocation of defense resources to the Rapid Deployment Joint Task Force? If not, what is the maximum allocation?

Admiral Bigley, what are the costs that are directly attributable to defense of Southwest Asia, as a subset of the total of $4 billion or more. What are these costs by appropriation account?

Admiral Bigley, what costs are allocated to the Rapid Deployment Joint Task Force, in addition to those that are directly attributable to defense of Southwest Asia? What is the breakout of these costs by appropriation account? For procurement cost, if any, what are the major end items of equipment to be procured?

Admiral BIGLEY. The $4 billion previously referred to as a measure of the Defense resources allocated to the RDJTF is an order of magnitude estimate based on an initial appraisal of the fiscal year 1983 Defense request.

We do not prepare the budget so as to isolate specific theater or command resource requirements. These dollars are carried in the appropriate functional accounts of the Military Department requests, and cannot be isolated by Service, item, and appropriation structure until all Military Department detailed justification data are complete. The Office of the Secretary of Defense (Comptroller) is currently compiling estimated fiscal year 1983 RDJTF/SWA costs. These data will be provided when they become available.

QUESTIONS SUBMITTED BY SENATOR CARL LEVIN

SIZE OF THE RDF

Senator **LEVIN**. General Kingston, the decision to develop a capability to respond to contingencies in Southwest Asia represents a major new commitment for U.S. Forces. Yet, creation of the RDF added no new forces to the U.S. force structure. Instead, existing forces which already have other commitments are designated for the RDF mission.

Against the worst case threat, what size RDF does DOD/JCS consider is necessary to execute Southwest Asia contingency plans with a reasonable assurance of success?

General **KINGSTON**. Considering the worst case threat to the region—[deleted]. We are presently updating our analyses of forces required for reasonable assurance of success in light of the latest threat information; [deleted].

DUAL-HATTED RDF FORCES

Senator **LEVIN**. Which of the forces assigned, or planned to be assigned, to the RDF are committed to reinforce NATO? Northeast Asia?

General **KINGSTON**. [Deleted.]

EUCOM AND PACOM CONTRIBUTIONS TO THE RDF MISSION

Senator **LEVIN**. Besides providing certain troops, what contributions from our forces assigned to Europe and the Pacific will be necessary to support successful accomplishment of the RDF's mission? Is it supplies, priority transit support, et cetera?

General **KINGSTON**. European Command and Pacific Command both have areas of responsibility through which RDJTF deployment flow would pass in a contingency. In accordance with joint operations procedures these supporting CINCs would be responsible for supporting the flow through their areas of responsibility. This involves en route access, landing rights, staging, petroleum, oils and lubricants support for air and sea flow, security of these lines of communications through their areas of responsibility. In accordance with JCS guidance, we look to USEUCOM/CINCPAC for emergency resupply of selected items in the event of a Southwest Asia region contingency. Such emergency resupply actions will be as approved by the JCS in their standard resource allocation procedure.

COMMITMENT FOR U.S. FORCES

Senator **LEVIN**. The decision to develop a capability to respond to contingencies in Southwest Asia represents a major new commitment for U.S. forces. Yet, creation of the RDF added no new forces to the U.S. force structure. Instead, existing forces which already have other commitments are designated for the RDF mission. What cooperation are you receiving from our commanders in Europe and the Pacific to insure these needs will be met according to your priorities not theirs? Are they cooperating sufficiently in peacetime planning to insure wartime success?

General **KINGSTON**. While additional forces have not been added to the force levels, the capabilities of US to protect that region have increased significantly. Establishment of my Headquarters has provided an organization to develop plans and provide command/control of forces if employed in SWA. Military capability consists of more than forces: [deleted]. In the event of a crisis, the JCS would then determine the priorities for each command involved.

SW ASIA MILITARY CONSTRUCTION

Senator **LEVIN**. Congressional actions have hampered military construction in Southwest Asia and enroute to that region, construction which seems to be most important to give the RDJTF the capabilities that it needs to accomplish its mission. Most particularly, Congress—mainly on the House side, has blocked our efforts to build important facilities at Ras Banas in Egypt. How important are these facilities to the RDF's ability to accomplish its mission? What is the price of the delays in this, not only in terms of added costs later but in terms of our military capabilities in the region?

General **KINGSTON**. [Deleted.]

FACILITIES FOR THE RDF

Senator **Levin**. What are the current conditions at Ras Banas and at other locations where we plan to build facilities? What progress has been made in these locations? Has any progress been made at Ras Banas?

General **Kingston**. Ras Banas is an extremely austere airfield with two runways that are C-130 capable. It has a contingent port capable of handling shallow draft vessels. It also has several aircraft shelters, ammunition storage facilities and other operational facilities which, when modified, can be adapted to other uses. Ras Banas lacks an adequate utility system and does not have a reliable source of electrical power or water. The airfield and port require significant upgrade before they can be used to [deleted].

The other locations at which construction is planned include Khasab, Masirah, Seeb, and Thumrait in Oman; Mombasa in Kenya; Berbera and Mogadiscio in Somalia; Lajes in the Azores; and Diego Garcia.

Khasab is an isolated site consisting only of a gravel runway that is currently C-130 capable but which needs to be improved for sustained C-130 operations. The project to realign, extend and pave the runway is currently 60 percent complete.

Masirah is an existing C-141 capable airfield with minimum support facilities. Located on an island in the Arabian Sea, the airfield is an old RAF installation and serves as an Omani training base and a combined civilian/military airfield relatively isolated from the mainland. The upgrade at Masirah provides for extension and improvement of the main and crosswind runways, plus the addition of fuel and munitions storage and operational support facilities. Work is currently underway.

Seeb is the main international airport for Oman and is in excellent condition. It is the main Omani airlift support base and shares the airfield facilities with the civilian air terminal and Royal Flight Operations. All Sultan of Oman Air Forces (SOAF) facilities are fully utilized. The airport does not have fuel and munitions storage to support the planned [deleted]. Projects to upgrade the fuel and munitions storage are included in the fiscal years 1982 and 1983 programs. Design is complete for the fiscal year 1982 program with construction projected to start in July 1982.

Thumrait is currently a small but modern tactical air base with an excellent runway and a small parking apron with minimal operations and support facilities. The fuel and munitions storage and the operations support facilities are insufficient to support the planned operations of U.S. Forces. Projects to increase the aircraft parking area and the fuel and munitions storage and add necessary operations support facilities are included in the fiscal year 1983 and fiscal year 1984 programs. Design of the fiscal year 1983 projects is 70 percent complete and is scheduled for completion in July 1982 in time to start construction upon receipt of authorization and funding.

Mombasa is the major seaport for Kenya. It can provide necessary services for fleet support. However, dredging of the harbor is required to provide sufficient draft for carriers. Work is underway with the dredging expected to be completed by September 1983. Airfield improvements are also required to support naval air access and fleet support requirements with the fiscal year 1981 and fiscal year 1982 projects under contract. The fiscal year 1983 projects are under design.

Berbera has a hard surface runway and small port facility with essentially no support capability. The fiscal year 1981-fiscal year 1983 programs provide minimal improvements to both the airfield and port to be able to operate naval air and fleet support ships from these facilities. The fiscal year 1982 projects will be awarded in September 1982.

The Mogadiscio airfield, which is an international airport, lacks sufficient support facilities for naval air support. Projects are included in the fiscal year 1983 program for improvement of the airfield to support naval air operations.

Lajes in the Azores has the capability to support C-141 and C-5 aircraft with its present airfield except for the fuel storage and distribution systems. The base operations and support facilities are old and in need of repair, and in some cases replacement. The current fuel system needs repair and upgrade and additional storage capacity must be constructed to support planned [deleted] operations. Upgrade of the current system is included in the fiscal year 1981 program with storage included in the fiscal year 1982 and fiscal year 1983 programs.

Diego Garcia is a well developed Navy airfield and port facility capable of supporting strategic airlift and providing fleet support. However, the airfield and port are not large enough to support the desired [deleted]. Additional pier space is required for off load of fuel and munitions. The airfield pavements must be increased and strengthened to provide support for strategic airlift and other operations. In addition, a fuel storage and distribution system is required to support the [deleted] through Diego Garcia.

The fiscal year 1981 projects at Diego Garcia provide the additional fuel storage, with the fiscal year 1982 program providing the hydrant refueling system and additional parking area. Expansion of the port was provided in the fiscal year 1981 program with additional operations and support facilities included in the fiscal year 1982 thru 1985 programs. The fiscal years 1981 and 1982 projects have been awarded.

Progress at Ras Banas has been limited to engineering survey and design. No construction funds have been appropriated for construction, although $106.4M was authorized in the fiscal year 1982 Miliary Construction Authorization Act. Design is underway with construction contract award scheduled for August/September 1982, provided a request for fiscal year 1982 supplemental funding is approved.

EGYPTIAN RELUCTANCY TO WRITTEN AGREEMENT

Senator **Levin**. Mr. West, why do you think the Egyptians are reluctant to sign a formal base agreement or facilities access agreement?

Mr. **West**. To the Egyptians, the term facilities, as opposed to bases, is very important. They make a real distinction between facilities and bases. Because of their historic experiences any thought of a foreign base is repugnant. To them a base implies a permanent, formal exclusive presence which infringes on Egyptian sovereignty. Any document that could be interpreted to be a binding international agreement (whether signed or unsigned), or one of a fixed duration, would be viewed within Egypt as establishing a foreign base. This characterization would carry serious political implications which could be seized upon by Mubarak's adversaries, both internal and external.

The Egyptians remain enthusiastic in their support for our regional strategy, but argue that our shared strategic interests, plus the political will on both sides, are stronger than any formal written agreement, such as the one they abrogated with the Soviets. They contend that their commitments to us are beyond challenge, and we should accept the Sadat letter, which has been reaffirmed by President Mubarak, as more than sufficient.

At present the GOE and the US have established, and held the initial meeting of a Military Coordinating Committee. The purpose is to institutionalize a forum for policy making on the many mutual security interests that are ongoing such as joint exercises, arms transfers, threat assessments, contingency matters, and other topics.

ENFORCEMENT OF INTERNATIONAL AGREEMENTS

Senator **Levin**. Mr. West, even if we had such an agreement, nothing would prevent the Egyptians from throwing us out if they wanted to or if the government changed, wouldn't you agree?

Mr. **West**. As we all know international agreements are not enforceable in a manner that is similar to a normal commercial contract. The so-called enforceability of a military agreement depends on the mutual interests of the parties at the exact moment when one party seeks to make use of the agreement.

We believe that the United States has established strong working relationships with many of the elected, administrative, and military officers in the government of Egypt. The many ongoing projects make it mutually beneficial to build for the future. While we must be vigilant in anticipating any change in attitudes of our many allies there is no reason at present to feel that there will be any change in Egyptian attitudes in the foreseeable future.

RISKS OF DELAYED RAS BANAS CONSTRUCTION

Senator **Levin**. Don't the risks to the national security of the US in terms of reduced military capabilities in the Persian Gulf because of delays in construction at Ras Banas far outweigh the financial risks to us from some always present chance that the Egyptians might throw us out some time after we have improved those facilities?

Mr. **West**. Yes, the risks to the national security of the United States due to reduced facility availabilities in the Persian Gulf area do outweigh the financial risks to us that at some unforseen time in the future such contingency facilities could be withheld from our use.

At present the facilities available for force deployment in the Persian Gulf area are limited by political and military realities. One of the great advantages of our planned facility at Ras Banas is that it will be tailored to the special needs required for deploying a major force to this area of the world. It will lend itself to joint exercises with the Egyptian military. It is strategically advantageous as related to a number of critical military needs.

The cost of construction will potentially be amortized over many years. Since there are growing economic interests on the part of the entire world in the economic assets of the Middle East and Africa it is essential the United States have a dependable facility in the area. We cannot present ourselves as a credible deterrent force without such a facility. Since no other such facility is expected to be available in the near future we need to make an investment now to protect our interests in the years to come.

RDJTF

Senator **Levin**. What is the status of negotiations with various countries to obtain facilities to permanently place an RDJTF contingent?

Mr. **West**. We do not have any negotiations underway to place an RDJTF contingent ashore in Southwest Asia.

LOGISTIC SUPPORT OF NAVAL FORCES IN INDIAN OCEAN

Senator **Levin**. The United States has gained limited access to facilities in Kenya, Oman, and Somalia, and has placed a repair ship at Diego Garcia to support the Indian Ocean carrier battle groups as well as the pre-positioned ships stationed there. To what extent will this capability meet the logistic support needs of the forces deployed in the Indian Ocean?

Mr. **West**. Access to these locations improves the sustainability of forces deployed to the Indian Ocean, enhancing our capability to project power in a timely manner. The stationing of a repair ship at Diego Garcia provides the capability to conduct intermediate level maintenance in theater. The programed improvements to the port at Berbera, Somalia will permit us to station a repair ship there. Access to airfields in Oman and Kenya provides transshipment points for air resupply of material and personnel from the United States. For example, the Military Airlift Command (MAC) air channel from Norfolk to Diego Garcia is through Kenya. Additionally, the United States is arranging access to fuel storage facilities in each of these nations. Finally, access to the port of Mombasa, Kenya provides an additional intheater source for minor repair work as well as location where ships of the Mobile Logistic Support Force (MLSF) can reprovision fresh produce.

FACILITIES ACCESS AGREEMENTS

Senator **Levin**. Are the facilities access agreements with Southwest Asian countries and at Diego Garcia adequate to support a wartime deployment of U.S. forces? If not, how much additional facilities are required? What efforts are underway to gain the additional facilities?

General **Kingston**. Early strategic warning and a timely National Command Authority decision requesting Congress to declare a national emergency are critical to our success in the region, and the size of force we can deploy will depend on how early that decision is made. With an early decision in the NCA warning process and using full mobilization, we can deploy a very credible front-end loaded interdiction force with our current access arrangements with Southwest Asian countries and Diego Garcia. However, sustainment of ground and land-based air combat forces requires additional facilities, particularly for pre-positioning heavy equipment, supplies, and water and petroleum products. The State Department is continuing diplomatic negotiations with [deleted] for increased access to facilities in a contingency.

COLLECTIVE SECURITY

Senator **Levin**. The Soviet Union is poised in Afghanistan, near the Persian Gulf fields vital to the United States and its Western European and Japanese allies. Have any Middle Eastern states friendly to the United States offered to join with the United States in defending the region against a Soviet invasion? What contacts has the RDF had with the newly formed mutual security apparatus by the Gulf Security Council?

Mr. **West**. The Gulf states have indicated their interest and concern over the ongoing Soviet actions in Afghanistan and although no formal agreement with the United States, outside of the access agreement with Oman, has been reached, it is tacitly understood that the countries involved would collectively band together with the United States in repelling a Soviet incursion into the region.

The RDF has had no contacts with the Gulf Cooperation Council.

STRATEGIC WARNING

Senator **Levin**. On page 4 of your statement, you qualify your explanation of how quickly the RDF could move forces to the Persian Gulf by stating "given sufficient strategic warning." What period of warning time is sufficient to you, and how confident are you that the US would receive such a warning?

General **Kingston**. [Deleted.]

SUSTAINABILITY OF FORCES

Senator **Levin**. A major concern about combat in a region so far from the United States is the sustainability of our forces—how long they can fight before they run out of fuel, food, bullets, and equipment. CJCS, General David Jones, last month, said the 5-year defense program budget for building our sustainability overall did not achieve this as fast as the JCS thought was desirable. Do you agree, especially as it relates to the RDF? Provide data by Service.

General **Kingston**. [Deleted.]

The Near-Term Prepositioned Force (NTPF) has provided the RDF with stockpiles of material for the services as follows: [Deleted.]

Service POM data are not readily available to the RDJTF, and this question should be answered in more detail by each Service.

BUDGETARY CONSIDERATIONS

Senator **Levin**. Even before DOD and the President decide the final shape of the defense budget, the services submit their 5 year requests, known as Program Objective Memoranda (POM). Do you think each of the services gave adequate priority to meeting RDF needs, not only in the sustainability area, but also as far as equipment, in their POM submissions? By service, in what major areas did you recommend programs to each service which were reduced or rejected in their POM-drafting process?

General **Kingston**. With respect to Service programming actions, I must first put into perspective how and where the RDJTF fits into the overall DOD Planning, Programming, and Budgeting System (PPBS).

The RDJFT is new in the DOD community. We were formed 2 years ago primarily as an operational deployable headquarters; consequently, we have not been actively involved in the PPBS and particularly the programming process (POM development. [delete].

Prior to October 1, 1981 RDJTF requirements were promulgated through US Readiness Command into the JCS and DOD community. After becoming a separate JTF on October 1, 1981 and during our transition to unified command status, we have and will continue to participate in PPBS to the same extent as other Unified Commands.

Since the unified commands entered in the fiscal year 1983–1987 programming cycle after the Service POMs were submitted, their involvement in the review process was limited to deliberations with the Defense Resources Board. However, in the fiscal years 1984–1987 POM development we have been in close coordination with the Services, either directly or through our components, to insure RDF requirements are clearly identified. The final outcome of this coordination will not be known until Service POMs are submitted in May, at which time we will have an opportunity to review Service recommendations and to comment to the Joint Staff for consideration in the Joint Program Assessment Memorandum.

At this stage of the progress, it is evident that all services have given the RDF adequate priority.

STRUCTURE OF THE RDF

Senator **Levin**. The debate continues about whether the RDF mission should be given to one military service or split among all of them as it is now. What would you respond to critics who believe the RDF is being structured incorrectly and that what is needed is a lightly armed, preferably amphibious force that can be inserted rapidly or kept aboard ships near possible crisis points? Do you think that just giving the RDF to the Marines, even with changes to the Marine Corps force structure in certain ways to give them more heavy combat capabilities and sustainability, will be adequate to meet the threats in the Persian Gulf the RDF is supposed to deter or defeat?

General **Kingston**. The threat faced by the Rapid Deployment Joint Task Force in Southwest Asia is a complicated one. The RDJTF must plan to confront a number of likely scenarios, ranging from a Soviet invasion of Iran to an inter-regional crisis in SWA involving countries and forces supported by but not directly involving the Soviet Union. Some of these scenarios include potential actions well inland. The potential size and nature of the enemy threat may well exceed the capability of a single Service. While each Service has its own unique capabilities, the key to the effectiveness of the RDJTF is the flexibility provided by combined arms, wherein force size and capabilities are tailored to meet the specific threat. Prudent military planning dictates that the RDJFT utilize the full range of capabilities offered by all the Services.

THREATS TO U.S. INTERESTS IN SOUTHWEST ASIA

Senator **Levin**. After the fall of the Shah and the Soviet invasion of Afghanistan our policy in the Persian Gulf has been that we would use force against any threat to our interests there. The RDF is reportedly being structured to defend against a possible Soviet invasion into Iran. Many observers believe that the Soviet mission is beyond the RDF or any force that might be assembled in the absence of full mobilization. They also believe that the real threat to the Gulf is from within and that the heavily armored RDF will not be prepared for such a crisis.

How do you rank the threats to our interests in the Persian Gulf in terms of their likelihood to occur within the next 5–10 years (ie: internal subversion, outside invasion especially by Soviets, wars between nations in the region)? What are the RDF's capabilities to deal successfully with each of these threats?

General **Kingston**. The threats range respectively from the most likely but least demanding to the least likely most demanding. They are: (a) internal instability, (b) intraregional conflicts, (c) Soviet supported subversion or invasion by surrogates, and (d) Soviet armed intervention. In addition to the lower level threats, the Soviets are capable of conducting either a limited or full-scale invasion of Iran. U.S. strategy should be designed against the most demanding scenario for two reasons: (1) continued access to Persian Gulf oil is considered a vital interest to the United States and our allies, and (2) by planning for the most demanding scenario, the RDJTF enhances its capability to respond to the full range of threats. While the Soviet threat is considered the least likely of potential contingencies, that does not negat the existence of that threat. Soviet involvement in Afghanistan and African countries provides ample evidence of Soviet adventurism in those regions. It is not considered militarily prudent to ignore the Soviet threat.

MISSION OF THE RDJTF

Senator **Levin**. President Reagan was quoted two months ago as saying that the U.S. would not permit Saudi Arabia to become another Iran. Later, there was a report that the mission of the RDF had been changed from meeting agression by the Soviets to dealing with internal threats. Your statement today stresses your mission against the Soviets. Does this mean that your mission has not been changed?

General **Kingston**. The mission of the Rapid Deployment Joint Task Force (RDJTF) has not changed.

Senator **Cohen**. Thank you for your testimony. The committee stands adjourned.

[Whereupon, at 4:34 p.m. the committee was adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

MONDAY, MARCH 15, 1982

U.S. SENATE,
SUBCOMMITTEE ON SEA POWER AND FORCE PROJECTION,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

MISSILES AND OTHER WEAPONS

The subcommittee met in open session, pursuant to notice, at 2:07 p.m., in room 224, Russell Senate Office Building, Hon. William S. Cohen (chairman) presiding.

Present: Senators Cohen and Byrd.

Staff present: Francis J. Sullivan, minority staff director; L. Wayne Arny III, and Patrick L. Renehan, professional staff members; Mark B. Robinson, research assistant; and Kathleen L. McGuire, staff assistant.

Also present: Jim Dykstra, assistant to Senator Cohen; Paul Schreiber, assistant to Senator Denton; Gray Armistead, assistant to Senator Byrd; and Bill Lind, assistant to Senator Hart.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator COHEN. The committee will come to order.

Last year when Senator Tower became the chairman of the Armed Services Committee he reorganized the subcommittee structure along more mission oriented lines. Indeed, this Sea Power and Force Projection Subcommittee is a direct result of that reorganization effort, and now, instead of being responsible solely for an only procurement or the research field, the subcommittee follows programs under its purview from their creation in the R. & D. account through their production in one of the procurement accounts.

This year I have attempted to extend this philosophy to the mission areas within the subcommittee's jurisdiction. Today's hearing is the first of four that will look at the full range of research and procurement programs under specific mission areas.

Aside from today's hearing on antiair warfare [AAW] and antisurface warfare [ASUW], we are also going to examine antisubmarine warfare, sealift, and airlift.

I would like to welcome today's witness, Vice Adm. Robert Walters, the Deputy Chief of Naval Operations for Surface Warfare. I have asked him to prepare a detailed statement for the record that provides a justification for this year's programs in AAW and ASUW.

I have also asked him to present a summary of threats in these areas and the general thrust of the Navy's near-term and long-term response to that threat. After that I have asked him to give us more details on five program areas that could be issues in the Congress this year: the DDGX program, the FFG-7 Mark 92 fire control system upgrade, surface-to-air missiles, the battleship and the Tomahawk cruise missiles, and finally mine warfare.

Before I turn to Admiral Walters, however, I would like to recognize Senator Byrd for any opening remarks you might have.

Senator **Byrd**. I will reserve any opening remarks.

Senator **Cohen**. I realize that some of the topics we might cover may have to be covered in closed session. I will try to keep it open as long as we can, and if and when we get into those areas you feel should be classified we will move into closed session.

Admiral Walters?

STATEMENT OF VICE ADM. ROBERT L. WALTERS, U.S. NAVY DEPUTY CHIEF OF NAVAL OPERATIONS (SURFACE WARFARE), ACCOMPANIED BY VICE ADM. E. B. FOWLER, U.S. NAVY, COMMANDER, NAVAL SEA SYSTEMS COMMAND; VICE ADM. ROBERT R. MONROE, U.S. NAVY, DIRECTOR, RESEARCH, DEVELOPMENT, TEST AND EVALUATION, OFFICE OF THE CHIEF OF NAVAL OPERATIONS; GERALD CANN, PRINCIPAL DEPUTY ASSISTANT SECRETARY, RESEARCH, ENGINEERING AND SYSTEMS, OFFICE OF THE SECRETARY OF THE NAVY; AND CAPT. S. O. NUNN, U.S. NAVY, SCN APPROPRIATION MANAGER, OFFICE OF THE CHIEF OF NAVAL OPERATIONS

Admiral **Walters**. I have with me today Vice Admiral Fowler, Commander, Naval Sea Systems Command; and Mr. Cann, Principal Deputy Assistant Secretary of the Navy for Research, Engineering and Systems.

If I might, Senator, I would like to present my statement for the record and then just give some opening oral remarks which will summarize my prepared statement.

Senator **Cohen**. That will be quite welcome, Admiral, and your statement will be entered in full in the record.

Admiral **Walters**. Thank you, sir.

[Slide presentation.]

Admiral **Walters**. As you know, we will discuss today a variety of subjects surrounding antiair warfare and antisurface warfare. My comments will include programs for surface combatants, missiles, other weapons, mine warfare as well as ship construction, weapons procurement, and R. & D. budgets associated with these programs.

The Secretary of the Navy has made it abundantly clear that we have the objective of regaining or restoring maritime supriority in the Navy. This means gaining a capability across a broad front in order to keep our access open to the seas of the world and to do this in the face of determined opposition.

In short, freedom of the seas is an asset that the United States cannot afford to give up. It is a national security objective and it is one that we have structured our program to support.

One of the things that we must consider regarding antiair warfare and antisurface warfare is the fact that they are defensive in name but not defensive in the terms of attriting the enemy.

Our primary purpose of going to sea is to deliver offensive power against an enemy, but in order to be able to do that we must be able to defend ourselves and attrite the enemy in the process. Therefore, there is a very close interdependence between mission areas which can be considered defensive in nature and the real offensive capability of the Navy.

You have already received briefings from the intelligence community on the Soviet threat. It is of real concern to us. Specifically of concern are the new ships and submarines which are being built by the Soviet Navy. They are about to launch the fourth ship of the *Kiev*-class carrier, and the new nuclear powered cruiser, the *Kirov*, is now at sea.

Another class of conventionally powered cruisers called the *Black Com I* is being built, and there are two new classes of guided missile destroyers, the *Sovremennyy* and the *Udaloy* which are under construction. The significant part of this is that these are quality ships representing an increased degree of sophistication that causes us concern.

In the submarine area they continue to build several new classes at a rapid rate. The new *Oscar* class submarine with its cruise missile capability certainly represents an increased threat against our surface fleets.

The Backfire bomber which is being deployed on a wider basis, extends the range and the scope of Soviet air power and supports their naval operations in several theaters of operations.

Deployed on all of these ships, submarines, and aircraft is an array of cruise missiles which are specifically designed to attack our fleets. Without going into the details of the specific missiles, they provide, first of all, a greater standoff range for the Soviet Navy. They have higher speeds and operate at higher altitudes with generally higher overall performance capabilities than their predecessors. Thus, the antiship cruise missile represents a significant threat to our forces at sea.

CARRIER BATTLE GROUPS

The principal means we have of carrying out our operations at sea, as you well know, is through our carrier battle groups. We will have a session with you later this week specifically on major strike platforms so I will not talk about those today because they will be discussed later by Admiral McDonald and me.

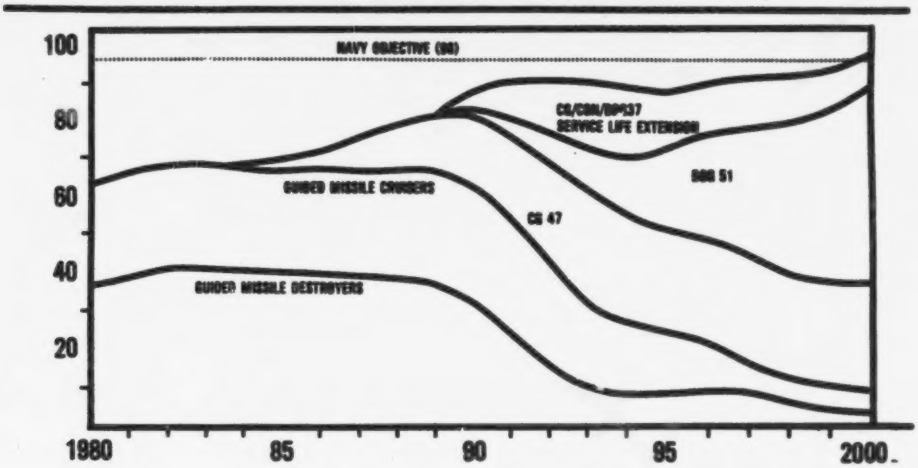
Today I will be talking about the other elements which make up that battle force, specifically the combatant ships, weapons, and aircraft which are a part of the battle force.

The most important of these surface combatants is the CG-47 or *Aegis* cruiser. We are asking for three of these ships in the fiscal year 1983 budget. As you know, the *Aegis* system is the most advanced combat system in the world today and it provides us with the capability to fight in a dense environment, both from the standpoint of countermeasures and enemy threat.

This technology is needed now and will be coming into the fleet in the first ship of that class next January. That same technology is also utilized by the DDG–51, formerly called the DDGX, which is one of your areas of special interest.

The precipitous decline in our forces, as a matter of fact, can be shown in this slide which shows where the CG–47 and the DDG–51 are needed in order to maintain our force level objectives of multi-threat combatants in our inventory as the older ships, specifically guided missile cruisers and destroyers, become obsolete in the early 1990's.

COMPOSITE GUIDED MISSILE CRUISERS AND DESTROYERS



Another battle group ship that is included in this year's budget is the *Iowa* class battleship reactivation. The *New Jersey* has been fully funded and we have the advance procurement funding appropriated for *Iowa*. At issue this year in our budget request is the full funding for *Iowa* and the long-lead for a third battleship.

These ships represent a great addition to our fire power. They can be reactivated at about the cost of a frigate in about one-third or one-half the time that it takes to build a frigate. We think it is a good investment.

Senator **Cohen**. What costs are you talking about? What are you projecting those costs to be and what is the timeframe?

Admiral **Walters**. The timeframe is 2 years to reactivate the *Iowa* at a cost of about $412 million. Thus, the activation time is 2 years as compared to the construction time for a frigate of about 48 months.

Senator **Byrd**. How does the size of the frigate compare to the size of the battleship?

Admiral **Walters**. The frigate is about a 3,500-ton ship and the battleship is about a 55,000-ton ship.

Senator **Byrd**. The frigate would cost, what did you say?

Admiral **Walters**. The frigate and the battleship would cost about the same. The battleship can be reactivated in about half the time it takes to build a frigate.

Senator **Byrd**. What about the complement?

Admiral **Walters**. The complement of the battleship is about 1,500, whereas on the frigate is a little less than 200. There is a factor of seven difference in complement.

Senator **Byrd**. Would it cost approximately as much to build a frigate as it would to recommission a battleship, to modernize a battleship?

Admiral **Walters**. Yes, sir.

In the antiair warfare mission area our objectives are to, first, improve the readiness and substainability of our forces; second, reduce the weapon inventory shortage of AAW weapons; third expand the battle space; fourth, improve the firepower and the reaction time of our weapons systems; and finally, improve the combat coordination among the various platforms which are involved in antiair warfare.

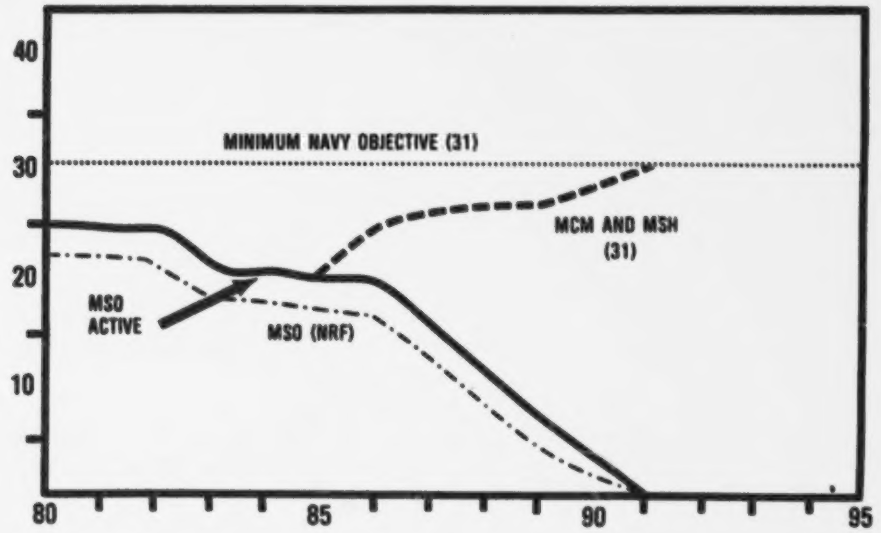
Closely allied with antiair warfare is the antisurface or strike warfare mission area. Our first objective there is to improve the distribution of offensive power. This represents a true offensive capability for the Navy because it adds a long-range antiship capability to aircraft, surface combatants and submarines. Specifically we plan to reduce weapons inventory shortages, to improve surveillance and targeting which permit us to utilize our weapons, to improve combat coordination, which is necessary in employing weapons at long range, and generally to broaden the distribution of this offensive power across surface ships, submarines, and aircraft, increase the firepower volume and the flexibility and improve the survivability of all platforms and specifically to improve the survivability of strike aircraft.

MINE COUNTERMEASURES

I couldn't adequately cover the entire antisurface warfare mission area unless I included mine countermeasures. Mine warefare bases a very serious threat to us.

The Soviet Union possesses a large stockpile of modern mines and with these they could potentially deny access to sea areas, harbors, and straits. We have been relying upon some very old mine sweepers, which were built in the 1950's along with 23 helicopters configured for mine sweeping.

MINE COUNTERMEASURES SHIPS



In the past 2 or 3 years we have worked very hard to structure a new force to provide a modern mine countermeasures capability. This shows, for example, what is happening to our present force of 25 ocean mine sweepers. Only 3 are in the active Navy, the other 22 are in the Reserve Force. The chart demonstrates how soon we fall below the Navy objective if we don't build new ones in the near term.

I should explain that the Navy objective of 31 mine countermeasures ships is based upon a risk strategy. We simply recognize that affordability if probably going to prevent us from achieving all of the mine countermeasures capability that we would like to have. So we have outlined a program which will permit us to clear ports and harbors sequentially within our own priorities. The strategy depends upon the allies clearing their own ports and approaches. This provides us the capability to sequentially clear those straits and distant areas where we must operate. For example, if we were to first clear Subic Bay then Sunda Straight might have to come second.

With that strategy we have derived a force of 31 ships and about 51 helicopters. We have divided the ships into two types, the more capable being the MCM of which the Congress authorized the first last year. We are asking for the next four MCM's this year. The other part of our construction program is the MSH, a low-mix mine sweeper, which will be much smaller and designed only for clearing our own harbors and local approaches. We expect to request funding to the first MSH in the fiscal year 1984 budget.

I think that, Mr. Chairman, that gives you an overview of my prepared statement. At this time I would be happy to respond to your questions.

Senator Cohen. Does anyone at the table have other statements to make?

[No response.]

DDGX

Senator Cohen. Admiral Walters, let's look at the DDGX. Apparently there is going to be a good deal of controversy and perhaps even conflict over that particular ship.

I had thought we had put the design and the capability of that ship somewhat to rest last year, but that does not appear to be the case. In your prepared statement you have indicated "With the exception of the SAL-GP and the Seafire control system, the design is as firm as it can be at this stage."

Now, No. 1, how sure are you of that, given the history of this particular ship?

Admiral Walters. The semiactive laser guided projectile is an operational requirement for any future ship. We still believe that guns are important and that guns will continue to be important. This is particularly true after some of the smart weapons are expended. In addition there is the emphasis which the Marine Corps constantly places on the naval gunfire support.

Senator Cohen. Does the Navy share the strong view held by the Marine Corps that you do need gunfire support in ships?

Admiral Walters. Yes, sir, we do.

Senator Cohen. Tell me briefly how the system works. Tell me how the SAL-GP works.

Admiral Walters. The round incorporates electronics to permit it to follow a signal return from a target. It requires a laser designator which will provide the laser illumination of the target. There are several ways of doing this. You can do it with a troop in the field with a backpack. You can do it from an aircraft which would be looking down on the target. With the target illuminated, you fire the round from a ship, the round picks up the return signal from the target, and the projectile homes in on it. It provides a very high first round hit capability. The third way of doing it is with the Seafire type of director with which you can conduct direct fire on targets that you can see and illuminate from the ship.

Senator Cohen. Did this weapon meet or exceed its mission requirements during the evaluation testing?

Admiral WALTERS. I think it is fair to say that in the operational evaluation of the guided projectile, it met or exceeded the requirements.

Senator COHEN. Would you say it was an unqualified success based upon that testing period?

Admiral WALTERS. From my perspective, yes it was.

Senator COHEN. Does a requirement for this weapon still exist?

Admiral WALTERS. In my opinion, the requirement does exist.

Senator COHEN. You indicated before that the Marine Corps does in fact fully support it?

Admiral WALTERS. Yes, sir.

Senator COHEN. And the Navy, I understand, fully supports it as well?

Admiral WALTERS. We support it as a requirement.

Senator COHEN. Part of the reason it was canceled, I am told, was because of the cost overrun. It was the only reason offered for its cancellation and I guess it was some 50 percent in excess of the target cost.

The question I have is, haven't we got a lot of programs, missile programs, for example, that have gone well beyond a 50-percent overrun and yet we have stayed with them? I am trying to find out why this has been canceled, this system which everyone says is needed and which has proved to be eminently successful during testing, remarkably successful I would say, in testing. The Marines say we need it; the Navy says we need it; it has performed well, unlike many of the other programs we have funded, and yet it was canceled. I don't understand why.

Admiral WALTERS. I think it was the timing of the discovery of the cost overrun. It occurred near the start of the program prior to initiation of the production. Often we already have a lot of sunk cost in the production of a system before we see the cost increase. Then it is much harder to stop. I think the Army has that problem today, for example, in Copperhead.

We believe that there was going to be a great deal of commonality between Copperhead and this round and we expected to see considerable savings in the production setup as a result of that commonality. It turns out that the commonality in piece parts is there, but the production line, as set up by the manufacturer, did not really provide much saving to the Navy.

We saw a cost increase per round that we had not anticipated, plus an overall increase in the production setup. These factors increased the program price to the point that it was a very difficult decision as to whether to go ahead or to stop.

Senator COHEN. Well, let me pose it to you in the way of a question. If in fact there will be no DDGX without the SAL-GP, would that change your recommendation or that of the Secretary of the Navy?

Admiral WALTERS. I am afraid, Mr. Chairman, that I wouldn't be qualified to answer that.

Senator COHEN. Well, let me ask you in a different way. Do you feel that the cost overruns justified the cancellation of the system?

Admiral WALTERS. Considering the timing of the decision and the fact that not all of the information was or even still is at hand, the right decision was probably made. The same decision might not be made had the timing been different and had more facts been known at the time the decision was made.

Senator COHEN. Well, I am trying to convey to you what I perceive is going to be a problem, not necessarily with this committee, but with the House. As you may or may not recall, those specific weapons systems, the two of them, the SAL-GP and the Seafire fire control system, were made an indispensable part of the DDGX, and I am predicting to you right now that that program is going to be in serious jeopardy without those two systems.

So whatever decision was made with respect to the cancellation of the weapons system, what you have in effect have achieved or will have achieved by the time this year is out is a cancellation of the program itself. Now that is not coming from me in any way as a threat. I am just telling you the reality of the situation as such. We are going to walk right into a cross-fire between the demands of the House and the decision of the program managers on this or the decision of the Secretary of the Navy.

The reason I wanted to go through these questions with you is to point out that here you have got a system that is, No. 1, desired, you have got a mission requirement that has been tested and it performs that mission probably better than most other systems that we have tested. Because of the cost overrun in this particular case, they have canceled the system which is going to result, in my judgment, in cancellation of the program.

So if you want to take a message back you ought to consider that. It is not coming from this side, I guarantee you. I want to see that ship, but I also am trying to be as direct and as honest as I can with you. You are going to have grave difficulties in getting this through the House without those two systems.

SEAFIRE

I would go on a little bit further and ask about Seafire. The Seafire was canceled at the same time as the SAL-GP. Can you give me basically a description of how Seafire operates and how it interfaces with the SAL-GP?

Admiral WALTERS. Without going into a great deal of technical detail, and if we need more of that I will call Admiral Fowler, the Seafire is a gun director with the capability of laser ranging and illuminating a target and providing the fire control signals to the gun to control its fire.

When asked if we need Seafire if we don't have a guided projectile, then we have to expand the question into the entire area of electro optics. We have not done a great deal in electro optics and we, in my opinion, need to continue development in that field. However, if you cancel the guided projectile, then we don't have a direct application for Seafire. So the way they are structured, the two go together.

Senator COHEN. So it has no separate independent use then?

Admiral WALTERS. Not at present.

Senator COHEN. Do you have any plans for replacing it with anything?

Admiral **Walters**. If we don't have the guided projectile, we will have a normal gun director type installation on the ship to be able to control the gun using conventional ammunition.

Senator **Cohen**. You did have some management problems, I guess, with Seafire at the time.

Admiral **Walters**. Yes, sir.

Senator **Cohen**. Had these management control problems stabilized at the time the system was canceled?

Admiral **Walters**. I am told that they had stabilized. The contractor involved had reorganized. I discussed the reorganization with a vice president of the corporation and met the new project manager. Although I have not been to their plant, some of my representatives have and reported that the contractor had properly reorganized and had the program on a sound footing.

So, to the best of my knowledge, I think the problems we initially foresaw in management were corrected. I would defer to Admiral Fowler if he wants to add something to that.

Senator **Cohen**. Just to follow it up, what I understand then is that since you don't have SAL-GP, there is no practical function for the Seafire fire control system without the SAL-GP?

Admiral **Walters**. That is correct, sir. I want to make certain that you understand it in the proper context, and that is that Seafire is designed to support a specific gun system.

Senator **Cohen**. I understand that, but what I am trying to get at now is what is this DDG-51 or DDGX? What is it going to look like and what kind of systems is it going to contain?

DDG-51

Admiral **Walters**. All right, sir.

From the standpoint of the gun system——

Senator **Cohen**. The gun system, I assume then, will be conventional and not guided missile?

Admiral **Walters**. That is correct. The gun system will be a standard 5-inch 54 gun mount. In the hope that eventually we can restore the guided projectile, we will retain a backfit capability in the gun system on the stern of the ship. You can barely see it on the slide, but the gun is back here. That represents a director for the gun. That would be Seafire if we have guided projectiles, if not there will be another type of gun director which will permit the direction of conventional gunfire, independent of the Aegis system.

Senator **Cohen**. Now if you have a different type of gunfire, then you are going to have to change that, too, if you decide to go to the SAL-GP.

Admiral **Walters**. If we go to SAL-GP the magazine and the gun can be "ORD-ALTED" to take that capability within the current envelop. The ship has been designed to accommodate with Seafire or some other kind of gun director. So, if we had Seafire and guided projectile we could put it on the lead ship, or on a follow ship with very minor changes.

Senator **Cohen**. Would the Seafire fire control system be inoperable with conventional?

Admiral **Walters**. It would not be essential for conventional ammunition. Seafire does give you a capability to see a target and determine its range under EMCON conditions or low visibility. It gives you an electro optical capability that we don't have in our current gunfire control systems.

Senator **Cohen**. Wouldn't it make sense to plan for it now if you have any hopes of going to a SAL-GP? It doesn't degrade the conventional capability, does it?

Admiral **Walters**. No, sir.

Senator **Cohen**. It gives you an option for moving to the SAL-GP if you decide to do so.

Admiral **Walters**. That is a fair statement. I haven't thought of it exactly that way and that is why I am a little hesitant on it.

Senator **Cohen**. Well, but see, with all due respect, what we ought to do is start thinking about these things because we inevitably find ourselves designing a ship perhaps for a lower cost now only to find that technology has proceeded and then we have got to make changes which eventually become more expensive.

So if in fact you have got a system, and I still want to go back to this, but if you have got a system which has a mission which has tested well and which has been successful and the only question at this point is the cost, it seems to me that you weigh that against what it might do to the ship itself; namely, force its cancellation because of controversy in another body. We do a great disservice to our Navy and our capability at that point.

So I am trying to explore with you the rationale for canceling both the Seafire fire control system and the SAL-GP when weighed against these potential actions by the Congress. It would seem to me at the very minimum you ought to have the Seafire fire control system preparing for the future.

Admiral **Walters**. I will look at it again from that point of view.

Admiral Fowler says we have provisions for doing that within the current design. So I will take another look at it with that specific objective in mind, sir.

Senator **Cohen**. Senator Byrd, I have some more questions, but I will yield to you.

NAVY DISAGREEMENT ON THE DDGX

Senator **Byrd**. Admiral, I hear that there is some disagreement in the Navy about the DDGX. Could you comment on this and provide us with the basic areas of disagreement on this ship?

Admiral **Walters**. I don't know of anything that is currently in disagreement within Navy. There are some issues that are of interest to the Congress and I will review those. We have just talked about one, the guided projectile and Seafire. Another one is the incorporation of ship systems engineering standards, SSES, which establishes the standards to make the ship modular and permits an easier mid-life upgrade in the exchange of combat systems or electronics. That is an issue which has been discussed at great length.

In that respect we feel that we are doing everything in SSES technology that we know how to do today sufficiently to cut metal and start building a ship, and install existing weapons systems. We know how to incorporate SSES in weapons systems, and we are doing that.

Senator **Cohen**. Is there a division within the Navy as to the need to have guided projectiles as opposed to missiles? Is there a so-called antigun lobby within the Navy, and I don't want to get into the NRA or anything like that, but I am talking about the antigun movement within the Navy. [Laughter.]

In other words, you have got the Marines who kind of like gunfire and need that when they go ashore, and you have got a very strong view, I assume, in the Navy concerning the use of missiles. Doesn't this reflect itself in the division of sentiment over the SAL-GP?

Admiral **Walters**. Senator, I don't believe we have an antigun club. People have different priorities and the gun, in many people's minds, would not rate as a high priority, and in fact in my own mind does not rate as high a priority as a long-range offensive weapon in some scenarios. But, I don't think we really have an antigun clique in the Navy.

Senator **Cohen**. Senator Byrd?

SHIP SIZE AND COST

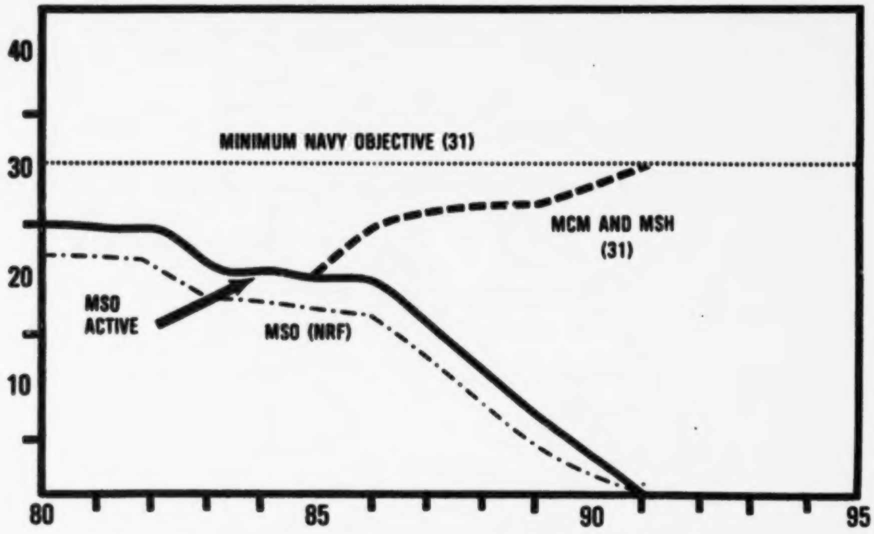
Admiral **Walters**. To go back to Senator Byrd's question, another issue is ship size and cost. There are those, Senator, who would say we want full capability in the ship and never mind the cost. We in the Navy want full capability, but at the same time we have to recognize that we need 50 or 60 ships like this. Whether they will all be this specific class or not, I don't know, but we must buy them in numbers; roughly twice the numbers, for example, than we plan for CG-47's. So, cost does become a factor to us from the standpoint of affordability. Size drives cost. So, size and cost are things that we have constantly reviewed.

We believe that we have in the DDG-51 a fully capable ship at a reasonable cost. It is a ship we think we can afford. Along the way we have made tradeoffs between capability, size, and cost in various systems.

There were issues originally on the combat systems design. A year or two ago there was a lot of discussion and a lot of soul searching on our part to try to find the best kind of weapons system for this ship. We found that the only one that exists or that could be available in the next 8 to 10 years was the Aegis system, or some derivative of it, and that system has been chosen for this ship.

Performance and engineering goals are other considerations that we have had to look at for tradeoff, but I don't think that has been a major issue.

MINE COUNTERMEASURES SHIPS



I have got a slide that shows the issues and we can throw that up quickly to refresh my memory. SAL–GP and Seafire we talked about. Next is vertical launched ASROC, an ASW standoff weapon. In the Secretary's letter to the Congress last year he referred to a vertical launched ASROC as being part of the DDG–51.

In restructuring our R. & D. program this past year we have undertaken a serious look at a common ASW standoff weapon which would meet both surface ship and submarine needs. If that were to proceed, then vertical launched ASROC would not be developed and would not be on this ship. So, that is an issue, and that is a question of timing. As I see it right now, either program would have difficulty meeting the lead ship, but could be available by the time the ship is ready to operate with the fleet.

The SPS–53 sonar has been discussed as an issue with Congress. It is a follow-on evolutionary development of the SQS–53 sonar that is currently in the *Spruance* class destroyers. We are improving it to make it better in both its active and passive modes and to incorporate solid state technology to make it smaller for use in smaller ships.

SQS–53C is tight for this ship. The back-up is the SQS–53B which would require utilization of some growth margin in the ship.

CONGRESSIONAL INTEREST TOPICS (continued)

TOPIC	PROBLEM
SHIP GROWTH ● COST ● DISPLACEMENT	● WRONG PERCEPTION FROM SCN SHIPBUILDING PLAN THAT DDG 51 COSTS AND WEIGHS NEARLY THAT OF CG 47 ● DDG 51 (779M VS 1025M FY-83 $) ● DDG 51 (8500T VS 9500T)

NO CHANGE FROM DNSARC

TOPIC	PROBLEM
PROPULSION EFFICIENCY ● 16 VS 35 PERCENT	● RACER INCORPORATED WHEN READY (20 PERCENT ADDITIONAL IMPROVEMENT) ● PERCEPTION THAT PROPULSION PERFORMANCE DEGRADED

NO CHANGE FROM DNSARC

TOPIC	PROBLEM
SEAMOD/SSES ● SINGLE VS DOUBLE ENGINE ROOM ● SMALLER PAPER SHIP ● A AND B MODULES	● PERCEPTION THAT SEAMOD SHIP IS DDG COMPETITOR

SEAMOD MID-SIZE TAILORED TO DDG
TO MAXIMIZE OPPORTUNITY FOR MODULARITY

Propulsion efficiency is another issue. The original design objectives specified to the Naval Sea Systems Command that we would like to see a 35-percent improvement in efficiency. This was a goal because we need to make our ships more efficient in fuel consumption.

The major components of this fall into two areas. One is to improve gas turbine performance in general. That is being funded in our R. & D. budget. The other is to use the Racer concept which uses waste heat from the gas turbine plant to drive the ship more efficiently.

Senator COHEN. Do you plan to put that in the lead ship?

Admiral WALTERS. No, sir. I do not plan to put it in the lead ship. I have it in parallel development and we are pushing it along as quickly as we can. When it has been developed, tested at a land-based test site and tested at sea and is ready to be put into a ship, we will incorporate it in the DDG–51. It is an issue as to when this system development will be available for installation.

Senator COHEN. Now, the contractor maintains that you are not going fast enough with your R. & D. program, that he could have it ready for the lead ship and the Navy disagrees. Who is right on that issue?

Admiral WALTERS. I don't know, Senator, but we have had an independent look at it by several people, and we think that the contractor is optimistic in his schedule.

I would like Admiral Fowler to discuss this.

Admiral **Fowler**. I don't have any doubt at all but what we are right in the degree of uncertainty and risk involved in meeting the lead ship. You know, it is not the first contractor I have heard that was highly optimistic of what he could achieve.

Senator **Cohen**. Are you going to be able to backfit the lead ship with the Racer?

Admiral **Fowler**. Yes, sir, it can be backfitted.

Senator **Cohen**. Senator Byrd?

Senator **Byrd**. How do you assess the growth possibility in the DDGX?

Admiral **Walters**. The growth possibility in the DDGX from the standpoint of future capability is assessed as excellent. We have attempted in all of our conceptual design studies to allow sufficient service margin for growth, so that we won't get into the situation we have been in with some of our previous ship designs which had no growth margin. We have adequate growth margin in the DDG-51.

Senator **Byrd**. Now, you said that the battleship *Iowa* cost about $400 million or $411 million, I believe it is, or $421 million. That is the first stage of course. What does the second stage consist of?

Admiral **Walters**. We have not come to a firm decision on the second stage, Senator Byrd, but the kinds of things we are talking about are improving its strike capability by adding more Tomahawk type missiles in vertical launch systems, improving its air capability, probably by providing better maintenance and operating areas for helicopters, and we have not ruled out the use of V/STOL type aircraft for short periods of time.

Senator **Byrd**. If you go to helicopters that would require the taking off of the big guns, wouldn't it?

Admiral **Walters**. If you do anything to improve the aviation capability of the ship, including maintenance, you almost have to take off the after turret. So, yes, sir, it would.

Senator **Byrd**. I imagine all of that would be pretty costly, wouldn't it?

Admiral **Walters**. Well, not just to remove the turret. We have looked at it from several aspects. If you try to remove the barbette and its supporting structure then that gets very expensive. Most of the schemes that I have looked at involve just pulling the turret and using the space inside the barbette for some other purpose, but not trying to alter that structure. If you put a helicopter or an aircraft hangar on top of that area, then its not such an expensive proposition as removing the whole thing.

Senator **Byrd**. I assume, that before you did anything like that, you would need to come back to the Congress for authorization.

Admiral **Walters**. Yes, sir.

Senator **Byrd**. In other words, the authorization was not included in the original proposal?

Admiral **Walters**. No, sir. I would expect that the first phase II request would be in the fiscal year 1985 budget because the *New Jersey*, for example, would be scheduled for overhaul in 1987 and that would be the timeframe to improve the combat systems and the command and control equipment in the ship.

Senator **Byrd**. Overhaul in 1987? Well, it won't become operational until, what, 1984?

Admiral **Walters**. 1983. It will be commissioned January next year.

Senator **Byrd**. January of 1983?

Admiral **Walters**. Yes, sir. So, that would be about a 4-year cycle for the first overhaul.

Senator **Byrd**. Is it on schedule?

Admiral **Walters**. Yes, sir, the ship is on schedule. It undocked Friday, 6 days early, and thus far every milestone has either been met or exceeded. It is within cost and on schedule.

Senator **Byrd**. That is good. I am somewhat intrigued with how that is going to work out. I think certainly it is a great ship. I imagine that those four battleships of that class are probably the best or the sturdiest, or whatever term you want to use, that the Navy has ever had.

Admiral **Fowler**. Survivable.

Senator **Byrd**. Survivable, that is the word I need, the most survivable ships we have had.

Admiral **Walters**. You might throw the picture up [slide deleted] of the ship with the weapons capability on it. We refer to these as the turrets, this is the one, I said, that might be removed. You can see if you do anything back here to improve the air capability that turret No. 3 would have to come off.

Those are armored box launchers for the Tomahawk. This is a little better picture. [Slide deleted.] Those are pretty good sized launchers. I saw the first one of these about a month ago in San Diego at General Dynamics. They are big boxes and they carry four missiles in each installation.

Then, in addition, there are Harpoon canister launchers. They are a lot smaller and there are 16 of these tubes for Harpoon and 32 for Tomahawk. There are close-in weapons systems. They look like little towers. They are the Vulcan/Phalanx gun system which is an automatic detection, closed-loop tracking system for close-in defense. To the left are the three 5-inch mounts on each side in addition to the three 16-inch turrets.

This depicts an oversized helicopter back here, but actually there will be capability to handle up to three helicopters on the fantail. We will not in the original version have a hangar for them. Any maintenance we do will have to be done on deck. We have some experience with that and we don't like it, but it can be done.

There has been some upgrading of the electronics on the ship in search radars and communications. What we have not done and what we would need to do in any future upgrade is to improve the combat direction system. The Navy tactical data system or some version of it, needs to go in the ship during the first upgrade.

Senator **Byrd**. Thank you, Admiral.

Senator **Cohen**. Let me just follow up a little bit more on the battleship, Admiral. I assume that the cost in the weapons system modernization is on track as far as the *New Jersey* is concerned?

ARMORED BOX LAUNCHERS

Admiral **Walters**. Yes, sir. The Tomahawk launchers and the software for that system were probably the toughest thing to get done in the timeframe we had. We have two contractors involved in the manufacture of the armored box launchers.

Senator **Cohen**. Did you change contractors for the armored box launchers?

Admiral **Fowler**. No, because when this ship was authorized last year we had not let contracts on the armored box launchers and we proceeded very rapidly to do that. So there was no change.

Senator **Cohen**. Well, tell me what you have done. You have got two.

Admiral **Fowler**. We have two contractors.

Senator **Cohen**. Now does that increase the cost of the launchers?

Admiral **Fowler**. We are going to procure a number of launchers as we go downstream. This is going to put us in a good competitive position and in my judgement should reduce the overall cost.

Senator **Cohen**. Will it cause any delay in the target for it?

Admiral **Fowler**. I don't think so. On the *New Jersey*?

Senator **Cohen**. Yes.

Admiral **Fowler**. No, sir.

Senator **Cohen**. It is my understanding that you plan to do the *Iowa* either in an east coast or a gulf coast private yard.

Admiral **Fowler**. We are going to do it competitively at private east coast or gulf coast yards.

Senator **Cohen**. There are some rumors that you have indicated that you want the contractors to perform a class B overhaul on every moving part. Is that correct or incorrect?

Admiral **Fowler**. I have never heard the rumor and it is certainly not my desire.

Senator **Cohen**. As a matter of fact, it would be inconsistent with what we are doing with the *New Jersey*, would it not.

Admiral **Walters**. Yes, sir. We plan to take a very sensible approach on the overhaul of equipment.

Senator **Cohen**. In other words, a reactivation as opposed to a class B overhaul is what is going to be in order for the *Iowa* as well as the *New Jersey*?

Admiral **Walters**. Yes, sir. As a matter of fact, we have already done that in the *New Jersey* as well.

Admiral **Fowler**. Well, we are going to do what is sensible. You know, there is a difference between the two ships. The *New Jersey* was activated during the Vietnam war and was put out of commission in excellent condition. So we had a pretty good start on it. The *Iowa* has been out for a long time. So we are going to do little different things. They are not all that much different, but we are going to take a sensible approach.

Senator **Cohen**. Well, I just want to take this opportunity to impress upon you and, if you will, upon the Secretary of the Navy that the reason that we are able to survive the Senate and I assume the House scrutiny and conflict over reactivating the battleships is one of cost and one of time. As you know, the Secretary of the Navy and the CNO have signed practically in blood that those ships are going to be out on time and at cost. If it is not, I can assure you we are going to have problems again and again and again in the future.

So I just want to take this opportunity to say that it is important for us to have any credibility with our colleagues on the Senate floor that we at least in that first ship, which is critical, and I assume the second one will be as well, that we meet those time and cost constraints.

"DES MOINES" CLASS CRUISERS

Have you examined the reactivation of the two *Des Moines* class cruisers?

Admiral WALTERS. Yes, sir, we have. We have taken a look at them and, as I understand it, we will not be able to present a full answer to all the questions involved until about August of this year. We are looking at the ships now.

Maybe Admiral Fowler would want to add something.

Senator COHEN. I just want to get some sort of comparative analysis at least as to their quality and their utility.

Admiral WALTERS. It is ongoing right now, sir.

Senator COHEN. Admiral Fowler?

Admiral FOWLER. I have no further comments, Senator.

Senator COHEN. I want to come back to the question about modularity in the design of the DDG-51. Some claim that your single tower design makes them vulnerable. I was wondering how you would answer that.

Admiral WALTERS. The single what, sir?

Senator COHEN. The single tower design makes the radar too vulnerable.

Admiral WALTERS. First of all, we are building the ship with a steel superstructure. We have made every effort to split up the various parts of the combat system to the point where there is more redundancy in this ship than we have had before. For example, we don't have all the computers in the same room as we had in the CGN-38.

We have four faces on this radar. Even though they are on one tower they are facing in four different directions and they are physically separated. The computer systems, for example, are designed with a spare computer so that if you lose one due to combat or any other reason you can have a substitute come on line without having to reprogram the entire system.

I don't believe that the single tower makes us any more vulnerable than two towers. In fact, it tends to make it a little less vulnerable from the standpoint that we have reduced the radar cross section of the ship through reduced size and height of the superstructure.

Senator COHEN. Let me go back to the propulsion system again. How hard are you working on the electric drive propulsion?

Admiral WALTERS. I am funding electric drive propulsion as an R. & D. project. We are not working hard to put electric propulsion in this ship because we do not think that it is ready for this kind of horsepower in this timeframe.

Senator COHEN. So you don't see electric drive systems for the DDGX?

Admiral WALTERS. No, sir.

Senator COHEN. Do you think there is any kind of a disparity between the amount of money that is going into the nuclear propulsion as opposed to non-nuclear propulsion?

Admiral WALTERS. There is. We have restructured our R. & D. program in surface ships, which I am responsible for, to increase the amount of investment that we are putting into the future. That is why, for example, that we are supporting R. & D. for electric drive. That is a R.D.T. & E. project. Maybe Mr. Cann or Admiral Fowler would want to address that.

We have put R. & D. money into the improvement of gas turbine efficiencies. We have a component improvement program for our gas turbines just as the aviators do for aircraft engines. We have an R. & D. line which supports the development of improved auxiliaries.

Senator COHEN. Could you for the record detail each of the R. & D. items as far as propulsion is concerned with a justification for them?

Admiral WALTERS. Yes, sir.

[The information follows:]

SHIP PROPULSION R. & D.

Non-nuclear propulsion RDT&E is accomplished in two program elements. These are briefly described below with a justification for each:

PE 63508N—Ship Propulsion System (Advanced); Project S0379—Gas Turbine Propulsion System.—This program develops advanced propulsion systems and component improvements for Navy surface ships, (gas turbine engines and system components of 5,000 to 50,000 horsepower). A Rankine Cycle Energy Recovery (RACER) System is being developed to convert gas turbine exhaust heat to useful power resulting in a potential energy saving of 25 percent. Devices and equipment necessary in the ship proplusion system—e.g., clutches, reversing gears and propellers, as well as fuel, air, and land control systems and equipment are developed. Gas Turbine Component Improvement Program, provides technical support by the engine manufacturer in providing analyses of component problems identified as a result of fleet operating experience. As life-limiting component problems are identified, corrective modifications are developed to improve reliability.

Project S1649—DDGX Propulsion.—This is a new start in fiscal year 1983. It will develop preproduction propulsion power transmission systems specifically for the DDG 51 class ships. This includes land-based and at-sea operational evaluation. The propulsion machinery will provide significant fuel economies by optimizing the latest developments in fuel efficiency.

Project S1683—Gas Turbine Efficiency Improvement.—This Congressional initiatives in fiscal year 1982 develops and validates (both ashore and afloat) the LM 2500 gas turbine engine modifications that will result in a minimum 2.5 percent improvement in overall engine fuel consumption. It is being planned that this effort will be further supported by the Navy in fiscal years 1984 and 1985.

PE 63573N—Electric Drive.—This program develops advanced electric drive systems and electric machinery for Navy ship propulsion. Electric propulsion for combatant ships was abandoned by the Navy after WWII because of excessive size and weight of available electrical machinery. The advantages of electric drives include ship machinery arrangement flexibility, ease of maneuvering control, low noise, and fuel economy derived from the ease of electrical cross-connect between propeller shafts and variable prime mover/propeller speed reduction ratio. Advances in electric machinery technology promise to reduce the size and weight and improve efficiency of high-power electric drive systems. Application of these systems in a gas-turbine-powered general purpose destroyer, for example, would provide substantial reductions in overall ship size and propulsion fuel consumption with resultant reductions in ship construction and operating costs as compared to identical range and mission capability ships equipped with conventional mechanical drive systems.

Best Available Copy

Project S1314—Electric Propulsion Systems.—This project develops and operationally evaluates electric propulsion systems for Navy ships with propulsion power requirements in the range of 20,000 to 50,000 horsepower per shaft. Initial developments are directed toward electric propulsion systems for near-term operational evaluation (starting in fiscal year 1987) in a Navy test ship and Approval for Service Use supportive of fiscal year 1989—fiscal year 1990 acquisitions of LM-2500-gas-turbine-powered surface combatant ships. Development preference is for those electric propulsion machinery designs which are considered low development risks for near-term at-sea evaluation and which are amenable to future upgrade with higher-performance, more-advanced-design components. This effort was initiated under the Major Surface Combatant in fiscal year 1982 at Congressional direction.

S1693—Electric Drive (Advanced).—This project develops advanced-design electric drives for Navy ships up to 75,000 horsepower per shaft. Emphasis is given to development of higher performance electric drives including advanced-design combined propulsion and ship service power generation. Advanced-design electric drive system component and technology developments will support upgrade of near-term electric propulsion systems and/or advanced ship acquisition in the post-fiscal year 1990 time frame. Project includes land-based and at-sea operational evaluation of advanced-design full-scale hardware. This is a new start in fiscal year 1983.

Senator **Cohen**. I would like to move on to the FFG–7's and the Mark 92 fire control system upgrade. I am told, Admiral, that the Navy doesn't want to proceed with a so-called coherent receiver/transmitter and, yet, it has also expressed its opposition to a phased array system or an update, at least on paper.

Apparently there seems to be two fundamental issues surounding this system that drive you in one direction and the critics in the other. So I would like to have you tell me what the mission of the FFG–7 ship is, what level of threat the ship is going to see, and then we will explore the secondary issues of cost and so forth. What sort of mission do you see for the FFG–7?

FFG–7

Admiral **Walters**. Put the slide up with the mission on it. [Slide deleted.]

This ship is designed with the mission of protecting in an ASW environment, either underway replenishment groups, convoys, or amphibious forces. The AAW system on the ship is primarily for self-defense and is not designed for area defense of a large group. Of course, if you have a significant number of point defense systems you do have a degree of area defense, and that is what we would hope to have with FFG–7's.

Specifically these ships were not designed to be battle group capable. We do not expect them to conduct their mission in the most threatening areas of the world, for example:

UNDERWAY TO REPLENISHMENT GROUPS

When in the vicinity of a battle group, they will be under the battle group umbrella of airpower and all the other missile systems we have.

AMPHIBIOUS FORCES

I can't conceive of a scenario in which we would operate the amphibious forces without the umbrella of several carrier battle groups. So there again this becomes a self-defense system.

MILITARY CONVOYS

In all of the scenarios I have seen, we intend to keep shipping and military convoys as well clear of the Soviet air threat for as long as we can when these ships are escorting them.

So what we have designed the weapon system and the ship to take on the primary threat we predict for it and that is submarine-launched missiles. These tend to be sea skimmers, and that is what the Mark 92 system was designed for.

Senator **Cohen**. Isn't the major threat the ease with which you could have jamming of the FFG–7 system?

Admiral **Walters**. A submarine firing a missile will not jam you. Normally, when you get jamming it is in the high threat environments where both standoff and self-screening jammers are part of an air strike.

Senator **Cohen**. Given the nature of the Soviet buildup, which we have talked about in closed session, don't you see the possibility and probability that you are going to encounter more jamming even if these ships are only used as escorts of convoys?

Admiral **Walters**. It is conceivable that the threat these ships will face will increase along with everything else; yes, sir.

Senator **Cohen**. So again from a planning point of view, wouldn't it make more sense to plan to upgrade the current system? I mean, if you have a jammming, even a moderate level of jamming, doesn't it seriously degrade the FFG–7?

Admiral **Walters**. Yes, sir, it does. We have on FFG–7 two radars which are complementary in nature. The major problem with the X-Band system is weather and that has been our major complaint.

We should answer this in closed session.

Senator **Cohen**. What is the cost of the upgrade that you project if you had a phased array system, for example?

Admiral **Walters**. Well, we want to go ahead with a coherent receiver/transmitter [CORT], which is a necessary and first step in developing a phased array radar.

Senator **Cohen**. You say you do want to proceed?

Admiral **Walters**. Yes, sir, we do. We think CORT is a good idea and we need to do that. That will cost in the neighborhood of $50 million to excute the R. & D. and somewhere in the neighborhood of $5 to $8 million, as I recall, to install per ship. We definitely think we need to do that and that it will significantly improve the system.

Senator **Cohen**. That is $50 million per ship.

Admiral **Walters**. No, not $50 million per ship, $50 million roughly for R. & D., and about $5 to $8 million per ship to buy and install it.

Senator **Cohen**. All right. Now what would be the comparative costs of a phase array upgrade for the FFG–7's?

Admiral **Walters**. We believe that to develop a phased array radar, to take it through an engineering development and to Opeval it would cost somewhere in the neighborhood of $250 million.

Senator **Cohen**. To R. & D. it, you said?

Admiral Walters. To R. & D. it, yes, sir. Then it is going to cost somewhere in the neighborhood of $20 to $30 million to buy it and install it, per ship.

Senator Cohen. I would be appreciative if you would give me a breakdown as to how you arrived at those figures for the estimate of the R. & D. on the phased array and the per ship costs as compared to the coherent receiver/transmitter, where you get the R. & D. to fit the $5 to $7 million per ship.

Admiral Walters. Yes, sir.

[The information follows:]

Phased Array Radar

The Navy breakdown of the estimated R. & D. costs for a phased array radar is as follows:

(1) $55M to prime contractor for engineering development of antenna, transmitter and radar processor cabinets, dual receiver and radar software;

(2) $58M to prime contractor for manufacture and test of the engineering development model (EDM) of the phased array radar and ancilliary equipment;

(3) $12M to the prime contractor for his costs during testing at a land based test site and at sea;

(4) $21M to the prime contractor for tools and test equipment and his cost of logistics support;

(5) $33M to the integration agent for the combat system integration design and combat system software development;

(6) $44M to procure government furnished equipment to set up the land based test site and for the prime contractor during initial development;

(7) $40M for Navy laboratory requirement analysis, design review, and data analysis, as well as aircraft services and test evaluation support.

Procurement and installation costs for this same phased array radar are as follows:

(1) $16M for hardware to include 3 solid state transmitter/receivers, phased array antennas and ancillary equipment;

(2) $8M for engineering and installation services and software;

(3) $6M for SHIPALT to include cooling, power and structural requirements.

The breakdown of the estimated development cost of the coherent receiver/transmitter is as follows:

(1) $15M to the prime contractor for engineering development of the receiver/transmitter, digital signal processor and antenna modifications;

(2) $9M to the prime contractor for manufacture and test of hardware;

(3) $5M to the prime contractor for test, evaluation and logistics support;

(4) $6M for Navy laboratory design review, data analysis, and T&E support;

(5) $9M for set up of land based test site, aircraft services, and at sea testing.

The estimate for procurement and installation of this coherent receiver/transmitter is taken directly from the prime contractor response, based upon a Navy statement of work. Considering this included two solid state transmitters with digital signal processors, the costs appear reasonable.

Senator Cohen. You also mentioned in your prepared statement that you have a weight problem with the MK-92 upgrade. How big a problem is that?

Admiral Walters. Well, we are at the point where most anything that we add to the ship is going to result in other equipment being removed because we are at a relatively critical stage from the standpoint of weight high in the ship. A new radar does go high on the ship. A phased array radar, even an X-Band made for a small ship, is a relatively heavy installation going high on the ship.

Senator Cohen. How many tons displacement are you talking about?

Admiral Fowler. I can't give you numbers on it off the top of my head.

Senator COHEN. Could you get that for the record?

Admiral FOWLER. Yes, sir.

Senator COHEN. And as to what the vessel's current displacement is and how that would impact upon that.

[The information follows:]

PHASED ARRAY RADAR

The assumed weight for the "Phased Array Radar" is 20.8 tons. It would require 65 tons of compensating lead ballast to ensure the center of gravity of the ship did not rise. Calculated full load displacement is 3,754 tons. Adding the Phased Array Radar and the compensating ballast would give a displacement of 3,839.8 tons.

SURFACE TO AIR MISSILES

Senator COHEN. I would like to talk about surface to air missiles for a moment. You mentioned the SM-3 missile and that you have $16 million for definition and for the start of advanced development.

Admiral WALTERS. The SM-3?

Senator COHEN. The SM-3. What is the range of this missile?

Admiral WALTERS. I would need to answer this in closed session.

Senator COHEN. All right. I will save those questions I have for when we go into closed session.

Let me come to medium-depth mines.

Admiral WALTERS. That should go closed also, sir.

Senator COHEN. Well, let me read a statement then from Senator Hart who can't be here.

He says:

> I regret that the hearing on chemical warfare prevents me from attending the hearing of the Seapower Subcommittee.
>
> I would, nonetheless, like to express in this statement my deep concern about the directions the Navy is reportedly taking in two programs: SSES (SEAMOD) and ARAPAHO.
>
> If the reported information is correct, the Navy is abandoning plans to make the DDG-51 a variable payload ship and adopting instead a much more restrictive definition of modularity. This will make it extremely difficult to convert the DDG-51 to roles other than the AAW despite possible evolutions of the threat.
>
> In the ARAPAHO program the Navy is reportedly abandoning plans for at-sea tactical testing despite explicit mention of such testing in last year's committee report.
>
> I have submitted questions for the record dealing with both of these programs and I would appreciate an effort to get the answers back to the committee before the beginning of markup.

So I will see to it that you get those questions.

Senator Byrd, do you have anything else to ask in open session?

FFG-7'S FOR NAVAL RESERVE

Senator BYRD. Yes. The Navy plans to bring a number of FFG-7's into the Naval Reserve. I like the idea. However, I would like your views on how well they will do in Reserve status. Can you maintain reasonable readiness in the Reserves and what are the comparable costs for these frigates in the Reserves as compared to the active Navy?

Admiral WALTERS. First of all, we totally support the assignments of new ships to the Naval Reserve Force because the FRAM destroyers are a liability and certainly are not very attractive to the Reserves who man them. We are looking forward to upgrading this force.

I think the capability of the Reserves to operate and maintain these ships is excellent provided that we meet our responsibility to provide proper maintenance facilities. We are trying to do that. Maintenance of the ships has been one of the foremost concerns and has led to what is the only area of disagreement that exists in the program, that is, do we put them where maintenance facilities are available or do you spread them around to where the people are?

We are trying to reach an appropriate compromise between the two in the belief that we must keep the NRF ships tied to a maintenance capability. At the same time we are going to try to put them in as many different ports as we can, but never less than two in any single port to permit mutual support.

As to a comparable cost, I would say it costs slightly less to operate ships in the Naval Reserve Force than it does in the active fleet. Primarily the Reserve crew costs less because a portion of the crew is a part-time crew and you are paying them part time.

In addition, NRF operating tempo is considerably lower, using less fuel. Because you are steaming less, you tend to require fewer consumables such as spare parts and supplies. So it is a little less expensive to operate the ships in the Naval Reserve Force than it is in the active fleet.

Senator BYRD. Admiral Walters, last year your predecessor presented a comprehensive review of the Navy's force structure with the 15-carrier battle groups and the number of each type of ship that would be needed and available.

Could you provide the committee with an updated version of that testimony?

Admiral WALTERS. Yes, sir.

Senator BYRD. Are there any fundamental changes?

Admiral WALTERS. You probably remember the 238 figure that he showed representing various ships. The only change is that we are now showing the battleships and the DDG–51's. For example, the surface action group, the composition of that has changed to include the battleship and DDG–51's.

This slide shows the 238 figure that you saw last year.

SURFACE COMBATANT FORCE LEVEL
NAVY OBJECTIVE (238)

	CGN	CG47	DDG51	DDG-993	DD-963	FF/ FFG
1-1 CV BATTLE GROUP						
7-2 CV BATTLE GROUPS						
2/3 CG-47		23				
2/5 DDG 51/CGN	6		31			
2/4 DD-963					30	
4 BB SAGS						
1 CG-47		4				
3 DDG51			12			
AMPHIBIOUS FORCE						
10 DDG51			10			
4 DDG-993				4		
8 FFG/FF						8
CONVOYS						
1 DD-963					7	
9 FFG/FF						63
URGS						
1 DDG 51			10			
3 FFG/FF						30
TOTAL	6	27	63	4	37	101
					137	101

Senator **Byrd**. Well, then in the battleships there is really no fundamental differences.

Admiral **Walters**. That is correct. The composition of the surface action group is now a battleship, a CG-47 and three DDG-51's, whereas last year I think he showed one CG-47 and two DDG-51's.

[The information follows:]

Surface Combatant Requirements

There has been no change in our surface combatant requirements from that presented last year and displayed on page 1900 of Part 4 of the printed record of Hearings before the Committee on Armed Services (Sea Power and Force Projection Subcommittee) for fiscal year 1982.

Admiral **Walters**. You might throw up those comparision slides on the surface action group now and in the 1990s. I think that will give you a good picture.

Senator **Byrd**. That is what I was coming to, as you retire the various ships what would you be faced with?

Admiral **Walters**. This slide shows the current composition of a surface action group. [Slide deleted.]

When we form surface action groups now we would have a cruiser, it could be a nuclear cruiser, and this happens to show a CG-16 class, and a couple of destroyers of the DDG-2 class, and two of the *Spruance* class.

In the future the surface action group would look like this. [Slide deleted.] The battleship is the centerpiece with DDG-51 and the CG-47. There is a significant increase in offensive power here, in that previous slide you saw only a Harpoon antiship capability and in this you see both a Tomahawk and a Harpoon capability. So you have a tremendous magnification of offensive power in this small group.

This slide depicts the carrier battle group as currently configured. [Slide deleted.]

I think these pictures are a quick way of showing you the changes that are taking place.

There is a battle group now. [Slide deleted.] We show a nuclear carrier. We normally have a nuclear cruiser or two with it. Again, the old DDG-2's and the DD-963, or in some cases even the FF-1052 are part of our battle groups. There are normally six to eight ships with a carrier. These ships have a good defensive capability today, but they are becoming obsolescent in many of their systems. They have a Harpoon capability only for offense.

If you look at the capability of the battle group for tomorrow, the 1990 period, which reflects our shipbuilding program, you now see the CG-47 as a part of that group, the CGN of course will still be there but upgraded with a new threat upgrade system to make her more capable. We will have DD 963's but in 1990 they will have Tomahawk capability in the vertical launch system. The DDG-51 will begin replacing the older guided missile destroyers.

Again this shows a tremendous upgrade in both defensive and offensive capability. Offensive power in 1990 is distributed in every one of the ships in the battle group, including the carrier.

Senator **Byrd**. You have a chart showing what your inventory will be in 1990 vis-a-vis what it is now.

Admiral **Walters**. In what, ships, sir?

Senator **Byrd**. Yes.

Admiral **Walters**. I have a slide that shows what is in the Navy today, the battle forces, the support forces, and the mobilization forces, and that was one of them that he just threw up there. It shows you what ships are authorized but not yet delivered, and then it shows you what ships are in our 5-year shipbuilding plan. It becomes classified to show you the individual totals.

I can only say that by 1989 our force level total of deployable forces is scheduled to be about 604 ships versus 491 today. Now that includes the ships that we are building that you have already authorized, those that you are going to authorize that would be completed and some service life extensions of ships that are in service today.

Senator **Byrd**. Now, I assume that some ships will be taken out.

Admiral **Walters**. Yes, sir, some would be decommissioned.

Senator **Byrd**. Could you update Admiral Rowden's testimony of last year? Just take his testimony and update it. Just do that for the record.

Admiral **Walters**. For the record, yes, sir.

Senator **Byrd**. Thank you.

[The information follows:]

Due the length of material, the information has been submitted to the committee under separate cover.

Senator **Cohen**. If there are no further questions in open session, I am going to declare the balance of the subcommittee's proceedings to be in executive or closed session.

[Whereupon, at 3:17 p.m., the subcommittee recessed and proceeded immediately into closed session.]

EXECUTIVE SESSION

Senator **Cohen**. All right, I think everyone who isn't here is appropriately not here.

SM-3

Let's go back, Admiral Walters to the SM-3. What sort or range does that missile have?

Admiral **Walters**. The SM-3 specifically has not been defined, Mr. Chairman. There is an area of uncertainty regarding the specific range of the missile.

Senator **Cohen**. Give me an approximation. Are we talking about something that has a range [deleted].

Admiral **Walters**. If you consider that we need a missile for the outer air battle in a new development, then, yes, we should be talking in the range [deleted].

Senator **Cohen**. Now are you familiar with the old Standoff Jammer suppression missile or the long-range surface-to-air missile?

Admiral **Walters**. Yes, sir.

Senator **Cohen**. How does the SM-3 differ from that?

Admiral **Walters**. It is an extension of that concept. The standoff Jammer was specifically designed to have a greater range than anything we have today and to get into the outer air battle area. It

Best Available Copy

was designed to go after the Jammer, and thus its name. Whereas today we are really talking about a missile that would have the capability of going after both a Jammer and a missile launching platform. That is to go after aircraft in general rather than just Jammers. So we would be looking at a multimode guidance type of capability.

Senator COHEN. Well, the reason I asked the question is that it is my understanding that either the Army or the Air Force, or both, are proceeding with the development of a long-range surface-to-air missile. The question I have is why are we going to spend more dollars to proceed down that line if in fact we have at least one and perhaps two other services who are also doing R. & D. in that field?

Admiral WALTERS. We are at the crossroads of decisionmaking from the standpoint of whether we ought to be going evolutionary or revolutionary. I think it is quite clear that we are going to have to take advantage of what the other services are doing, and we intend to do that.

Senator COHEN. You talk about evolution. A [deleted] missile is more than simply an evolutionary step from what we are talking about.

Admiral WALTERS. Yes, it is.

Senator COHEN. You are talking about a revolutionary step in essence.

Admiral WALTERS. I was trying to get back to the SM-3 which hasn't been determined. If we are talking about a [deleted] missile to do the outer air battle problem, that is a revolutionary capability.

Mr. CANN. If I may. There was a concept called Thor which was originally in our budget early in 1983. It was eliminated from the budget in the tailend of the budget cycle. Thor was clearly a [deleted] concept [deleted].

We had a extensive discussion with Dr. DeLauer's staff about a joint service requirement in this area. We have essentially agreed to shelve that issue for the time being.

The issue that is confronting us today, which is the SM-3 issue as I see it, is one that is clearly a need for more speed. [Deleted.]

The issue that we are addressing internally is whether or not we proceed with an evolutionary upgrade of the current standard missile system or take advantage of the space available on the vertical launcher and develop a new missile. There are an awful lot of open technical issues.

You could evolve whatever approach is chosen [deleted]. The issue [deleted] is very much tied to the perception of an operational concept [deleted].

I would have to say, at least from my perspective, that that is still a very open issue.

Senator COHEN. The SM-2 block III missile, [deleted].

Mr. CANN. No, sir.

Admiral WALTERS. Just the booster. In other words, in the vertical launcher, [deleted].

Best Available Copy

MEDIUM-DEPTH MINES

Senator **Cohen**. I would like to turn to medium-depth mines. About a year ago, Admiral, the Under Secretary of the Navy, Robert Murray, canceled the so-called intermediate water depth of the IWD. He sent the engineers back to the drawing boards out of which apparently emerged now this medium-depth mine that was very similar to the IWD in size, capability and cost.

The first question. Why did the IWD get canceled?

Admiral **Walters**. Well, the IWD, as you have correctly perceived, is probably the third name given to this capability. We still require an intermediate-depth mine capability.

The fundamental problem that we had with the cancellation of the last program was that we wanted something sooner. I think Mr. Murray's approach was that there surely must be something we can get sooner because we have a need. So we went back to restructure a program which would get us there sooner.

I would have to defer to Mr. Cann as to whether we will be able to meet that objective.

Mr. **Cann**. The original IWDM concept, which again is an outgrowth of another concept, [deleted]. Also, the costs were going up very rapidly and were approaching a billion dollars for development without getting into a production program. That is the basis on which the program was canceled because it seemed like a very long time to program.

A request was made to look at variants and other options. One that I think you are familiar with was a two-step approach which essentially took the original IWDM approach and came up with a near-term concept and then a follow-on which got you right back to where you were. You end up with more costs and at least the same schedule because you are doing something twice.

This brought us to the point where we said let's take a look at least at two other potential solutions, one being a Captor variant, because Captor is now in our inventory. Some of us feel that it might be worth it this time to review the operational requirement for the system to determine if we really want to keep the surface ship kill role because, if you don't, then we could use Captor to cover the intermediate water depth.

The second thing is our allies. The British have been talking to us about entering into a joint development of a program they call the Continental Shelf mine. The major difficulty with that mine, as they conceive it, is it is a very large mine and it has to be ship-dropped because it is so heavy.

At the present time we don't really have a concept that we can pursue, even though there is a definite requirement that has been stated for a mine to cover the intermediate water depths.

Senator **Cohen**. Admiral, you made the statement that we are going to drop some of the requirements perhaps, or loosen them up a little bit. What are we doing specifically to try and produce some mines that can be produced at a reasonable cost relatively quickly and stockpiled easily and not make another missile out of a mine?

Admiral **Walters**. Yes, sir, and I think that Mr. Cann hit the crucial point. There are some choke points in the world that we would want to mine offensively. When you look at our priorities, [deleted] we have a much better capability to take care of than we do the [deleted] which once it gets out and gets dispersed is harder to find and engage.

So I think the relative priorities of what you want to achieve with this mining effort is to concentrate on the [deleted] target then you can simplify this mine and fill that void in water depth with [deleted] approach.

Senator COHEN. How much money do you have in R. & D. for this?

Admiral WALTERS. We have $7.6 million from fiscal year 1982. There is nothing in the fiscal year 1983 request.

Senator COHEN. Those are all the questions I have for right now. I have a number of questions I would like to submit to you for the record and I would appreciate it if you could get the answers back by Friday if at all possible since we are trying to conclude the hearings and get ready for the markup.

Senator Tower expects to take the defense authorization bill to the floor the first week in April. So we have got a lot of work to do between now and then. If you can get the answers in we will try and keep them to a minimum. If you can supply the answers it will help us very much in proceeding with the markup.

Admiral WALTERS. Yes, sir.

[The prepared statement of Adm. Robert L. Walters follows:]

PREPARED STATEMENT OF VICE ADM. ROBERT L. WALTERS, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS FOR SURFACE WARFARE

Mr. Chairman and members of the committee, I am Vice Adm. Robert L. Walters, USN, the Deputy Chief of Naval Operations for Surface Warfare.

Today, as you have requested, I will discuss a variety of subjects, centered around the Anti-Air Warfare and Anti-Surface Warfare mission areas. My comments will include surface combatants, missiles and other weapons, mine warfare, and the SCN, WPN and RDT&E associated with those programs. In addition I will present information on auxiliaries and other ships in the Administration's five year SCN plan which will not otherwise be covered in this series of warfare area oriented hearings. In order to tie together the elements of AAW and ASUW/Strike I have also included in the classified statement an overview of the important command and control programs which we require to optimize the effectiveness of our forces.

The Secretary of the Navy has made it abundantly clear that it is the policy of this administration to restore maritime superiority to the United States. He has described in detail the naval strategy we are pursuing today.

The term "maritime superiority" is not nearly as important as what is meant by the shorthand term. What is meant is that we must be capable—and be seen as capable—of keeping our access secure to areas of our vital interests, and must be able to do this in the face of the most determined opposition. A stalemate is unacceptable because it is we who depend on the seas. In short, freedom of access to the seas, for us, is a national objective—a national security imperative, an essential condition for the success of any national security strategy.

Our strategy rests on several basic principles. We must be able to: Operate on a global scale; hold our potential adversaries at risk; control the potential concentration of forces against us; deter Soviet first use of nuclear weapons; control escalation; and terminate any conflict on favorable terms.

In structuring a navy that fulfills these strategic requirements there are several tasks which must be met. If we are to protect and maintain our sea lines of communications in those areas of interest to us, we must also control the air space above as well as the space on and beneath the surface of the sea. We refer to these tasks as anti-air warfare, anti-surface/strike warfare and anti-submarine warfare. They are, in the main, defensively oriented. Defense, however, does not deter not does it win, but it permits us to achieve our objectives of power projection and attrites enemy forces on the way. The interdependence between defensive and offensive mission areas is what we refer to when we discuss multi-mission ships. Both are necessary

Best Available Copy

in a balanced warfighting force and I will address our requirements for both offensive and defensive combat systems and weapons.

THE THREAT

One of the most dramatic developments of the post-World War II period has been the growth of Soviet Naval and Maritime power. The Soviets have a very ambitious and aggressive foreign policy that seeks to extend their economic and political influence in many strategic areas of the world; it is clear that they visualize Soviet sea power as an important instrument in carrying out this foreign policy. They are also prepared, if necessary, to fight across the full spectrum of limited and general war scenarios.

Commensurate with this policy, we continue to observe important advances in Soviet naval warfighting capabilities. A fourth *Kiev* class carrier will soon be launched, and there are indications that lead us to believe work has begun on a modern conventional take off and landing aircraft carrier. We have no reason to doubt their ability to build a nuclear powered carrier. The Soviets first nuclear powered cruiser, the *Kirov*, is now at sea, and a second ship of the class is fitting out. Another, conventionally powered class of cruiser, the *Black-Com I*, is also under construction, as are two new classes of guided missile destroyers, the *Sovremennyy* and *Udaloy*. New classes of submarines are also appearing, including the *Typhoon* SSBN and the *Oscar* SSGN. *Alfa* and *Victor* class SSN's continue to be produced. Soviet naval aviation continues to receive new Backfire bombers [deleted]. The Soviet naval order of battle now stands at [deleted] *Kiev* carriers, [deleted] other major surface combatants and [deleted] submarines, [deleted] additional minor surface units intended primarily for patrolling and defending the Soviet Union's littoral.

Just as impressive as the Soviet shipbuilding program are the weapon systems capabilities which are being built into their warships. The primary threat to U.S. Battle Forces is and will continue to be the anti-ship cruise missile (ASCM). The highly sophisticated, long range SS-N-19, with a range in excess of 240NM [deleted] has been installed on the *Kirov* nuclear powered cruiser and the Oscar SSGN. A new [deleted] missile, [deleted] is carried on *Sovremennyy* class DDG's. The *Black-Com I* cruisers will carry the 300NM SS-NX-12 while Soviet naval aviation Backfire bombers carry the high speed, long range AS-4 ASCM.

Soviet advances in surface-to-air missiles are also in evidence. The long range SA-N-6 [deleted]. Soviet advances in other weapons systems, torpedoes, air defense, machine guns and mines, to name a few, also contribute to the threat against U.S. Battle Forces.

Future developments in Soviet naval warfare capability are projected [deleted].

The Soviet Navy continues to sustain the unrelenting momentum of new ship and missile production aimed at creating a force capable of responding to the full range of wartime and peacetime tasks. This unrelating buildup of Soviet seapower present, a clear and present threat.

THE BATTLE GROUP

The principle means of ensuring maritime superiority in the face of this growing threat is the continued improvement in the warfighting capability of our U.S. Navy battle groups. The administration's requirement is for 15 battle groups. The Chief of Naval Operations has stated his personal opinion that fifteen Carrier Battle Groups is the minimum required to execute a strategy of maritime superiority.

In any event, to combat the threat just discussed, we require the construction of new and improved classes of surface combatants which are equippped with the latest sensors and weapons systems.

Primary among these is the CG-47 *Aegis* cruiser. The fiscal year 1983 Budget includes a request for three, the eighth, ninth and tenth ships of the class. The first ship of this class, *Ticonderoga*, was authorized and funded in the fiscal year 1978 budget and was christened last year at Pascagoula, Mississippi by Mrs. Nancy Reagan. Thus, the first ship is afloat and will deliver in January of 1983, less than a year from now.

The *Aegis* system installed in the CG-47 class is the most advanced anti-air warfare system in the world and is designed to counter the full spectrum of anti-ship missile threats of the 1980s and beyond. It provides area air defense in a high-density, high-threat, anti-ship missile environment. Our countinuing assessment of Soviet missile-launching capabilities confirms that CG-47 class ships are urgently required in the fleet in numbers.

Best Available Copy

Aegis technology is required in order to successfully counter the large numbers of the many different types of Soviet anti-ship missiles which could be launched in a coordinated attack against a battle group or any other force. The DDG-51 class will provide additional *Aegis* capability and with the CG-47 will ensure the ability to provide an umbrella of assured destruction against missiles and planes which would contest for the oceans of the world. For the past two years, there has been great controversy regarding the design, size, sensors, weapons suite and the cost of this ship. I can report to you that the Navy has resolved these issues. We are ready to go forward with a ship which meets our requirements in every way and which is affordable in numbers required. Information requested by the committee regarding DDG-51 design is provided at TAB A. Even if new technology was not required, we still need the DDG-51 as a replacement for current ships approaching the end of the effective service life (ESL).

This viewgraph depicts the precipitious decline in guided missile cruisers and destroyers commencing in fiscal year 1989, and graphically demonstrates the urgent need for commencement of the DDG-51 construction program in fiscal year 1985 followed by a rapid build up to five or six ships a year.

Another element of our battle group ships which is not yet in the fleet is the *Iowa* class battleship. When recommissioned with their original sixteen inch guns and augmented with Harpoon and Tomahawk missiles they will be the most powerful and survivable surface combatants afloat. To date, the reactivation of *New Jersey* has been fully funded and $88 million in advance procurement appropriated for *Iowa*. This year we are requesting the balance of funds for *Iowa* as well as long lead for the third ship. We will undoubtedly again hear argument against reactivation, but we are strongly convinced that the reactivation of these ships provides the U.S. Navy more offensive firepower per dollar expended that any other item in the shipbuilding program. These ships, with more armor and more firepower than any contemporary ship, are unquestioned bargains and they should have the full support of all who desire the resurgence of U.S. seapower.

Against this backdrop of strategy, threat and platforms, I will now discuss each of the Warfare Mission areas.

AAW MISSION AREA

Although anti-air warfare will be described below as a separate warfare areas, the fact is that Strike, Anti-surface and Anti-submarine Warfare are all interdependent with the AAW Mission Area, and, in fact, Anti-Air Warfare is a normal prerequiste to any of the other warfare areas. The Navy will not go to sea to conduct AAW alone, rather it will conduct AAW as necessary to execute any or all of the other mission areas to maintain or regain maritime superiority in any given ocean area. Maritime superiority is highly dependent on the success or failure of initially achieving maritime air superiority.

The Navy's primary goal to establish and maintain maritime superiority over any enemy requires strengthening our fleet air defense.

Our AAW program is designed to meet these key objectives: Improve readiness/sustainability; extend the battle space; improve firepower and reaction time; improve combat coordination; and reduce weapon inventory shortage.

Soviet Anti-Ship Cruise Missiles (ASCM) pose a serious threat to our naval battle forces and Sea Lines of Communications (SLOC). The threat is dynamic and the many possible conflict scenarios require us to build force AAW capabilities to meet the needs of a deployed Carrier Battle Group (CVBG) or Surface Action Group (SAG), Convoys, Underway Replenishment Groups (URG) and Amphibious Forces to operate for periods without the air superiority umbrella provided by carrier aviation. The principal AAW threat we face is the ASCM launched by Soviet submarines, surface combatants and aircraft. Moreover, it is conceivable that we may eventually have to encounter highly capable Soviet sea-based tactical air should his CTOL aircraft carrier development continue.

[Deleted.]

Success in the anti-air warfare mission area depends upon each of the elements of the "defense-in-depth" concept. Defense-in-depth is a method to break the simultaneous multi-warfare battle problems into geographic phases/zones for discussion only. It must be recognized that in reality we have dynamic and unpredictable threats and battle scenarios which cannot be reduced to an orderly set of steps or zones in which the enemy will be engaged in all cases during naval warfare. There are times when the first chance to detect and engage the enemy is when he presents himself to the point defense. Another way to think of this is to recongize that there is no well defined "battle front" in the same sense as land warfare. Defense-in-depth

Best Available Copy

is organized into the following zones: Long range intercept and surveillance zone (outer air battle); outer defense zone (outer air battle); area defense zone (inter air battle); and point defense zone (self defense).

Fleet air defense begins [deleted] capabilities are required to attrite the launch platforms in the long range surveillance and intercept zone, beyond organic sensors. Closer-in launch platform attrition, within organic airborne and/or surface sensor range, is accomplished with picket DDG's and air-to-air missiles prior to ASCM release range. After their launch, ASCM attrition is accomplished in the area defense zone with surface-to-air missiles launched from our surface combatants and lastly with the point defense (self defense) weapons, [deleted.]

Our preference is to destroy the launch platform in the outer defense zone before ASCM released. [Deleted.] This is well supported by analytical and fleet exercise results. [Deleted.]

Effective multiple engagements will be a function of battle space, time gained in detection and battle force weapon inventory. We must not only maintain adequate battle space, but must also ensure that we have the rapid reaction time and sufficient firepower to cope [deleted].

For example, experience in at-sea exercises, today indicates that time from detection to weapon launch by AAW cruisers may vary [deleted]. That is much too long, particularly against supersonic threats. Reaction times must be reduced [deleted] in the projected threat environment to maintain adequate SAM firing doctrine or enforce nuclear keep-out zone. Today's guided missile cruiser can engage [deleted] simultaneous target. We must double that number in the near term. *Aegis* cruisers with [deleted] reaction time will be able to control [deleted] independently-targeted missiles in flight; this gives us real capability to counter saturation attacks.

We are also proposing programs in the FYDP which will result in substantial improvements in all zones, outer area and point defense, as new systems and sub-systems appear in the fleet [deleted]. However, our capability [deleted]. To maintain pace and create the edge required for offensive operations we must increase firepower, shorten reaction time, and enhance our "offensive" AAW performance in the outer defense zone. Increased firepower will go a long way toward addressing the problem of saturation tactics but will also place additional demands on our inventories of AAW weapons that are well below requirements at present.

R. & D. OBJECTIVES

To offset the growth in Soviet naval air power and in particular Soviet Cruise missile improvements, Research and Development is focused to emphasize integration of systems for over-the-horizon surveillance, the outer air battle, area defense and point defense. Our AAW objectives require: (1) Improved quality and quantity of existing anti-air warfare weapons and systems. (2) Developing new weapon systems to requirements for which current systems cannot be upgraded. (3) Improving our acquisition strategy to develop our new systems in the shortest time with lasting operational reliability and a cost we can afford.

With respect to our need to improve existing anti-air weapons and systems, I should call your attention to the fact that many of our existing weapons without evolutionary improvements could become relatively ineffective against new Soviet aircraft and anti-ship missiles [deleted]. We must continue to upgrade the lethality and operating characteristics of our anti-air warfare systems if existing weapons are to remain effective. This approach is being followed, for example in our Standard missile, Phalanx, Phoenix, MK-92 Fire Control System, New Threat Upgrade and *Aegis* Improvement Programs.

In parallel with our improvements to existing anti-air weapons and systems we are continuing efforts to design for introduction of new ships and weapons urgently needed to improve our posture relative to the Soviets. The new ships and weapons are being developed and testing in a much improved manner over any previous generation of ships and weapons that the Navy has ever built with great emphasis on performance, reliability and maintainability. We intend to pursue and extend our policy and practice of assembling, testing and integrating total systems at land-based test sites including sensors, fire control subsystems, weapons launchers, etc., before the total system is delivered to the fleet for at-sea testing. The *Aegis* and New Threat Upgrade Programs has proved the efficiency and economies of this practice.

We are improving our acquisition strategy and trying to shorten the time required to develop new weapons through better planning, and initiatives aimed at streamlining the acquisition process initiated by the Secretary of Defense. These improvements include simplifying and decoupling of the acquisition process, multi-year

Best Available Cop

procurement, concurrency where common sense and risk of development warrant, and pre-planned product improvements (P³I) to effectively implement evolutionary changes in our weapons and systems.

In summary, Soviet forces now have the momentum of high previous investment and I foresee a period of increased vulnerability between now and the time reasonable numbers of our advanced systems reach the fleet. We need increased force levels to ensure that deployed battle forces are sufficiently strong to handle Soviet [deleted] tactics and then be capable of carrying the battle to the enemy. Anti-Air Warfare is only one of the six principle warfare tasks, but each is essential if we have to engage the enemy to control the seas. The Navy has made measurable improvements in AAW through enhanced readiness and sustainability. This budget has been submitted to maintain the initiative and momentum achieved over the past 2 years with a weather eye on the ever-increasing sophistication and numbers of the Soviet threat. We plan to initiate further examination of alternatives to prosecute "offensive" AAW in the outer defense zone to attrite bombers [deleted]. We control the program but the Soviets control the pace of the threat. The result is an extended period of uncertainity unless we support warfare mission upgrades which are aimed at keeping pace.

AAW PROGRAM

The fiscal year 1983 AAW program, as detailed below, continues a balanced program to extend the battle space, improve firepower and reaction time, improve combat coordination, reduce weapon inventory shortages, and improve readiness and sustainability. Principle elements include: continued procurement of *Aegis* Cruisers; installation of vertical launchers; upgrade of the Standard Missile family (SM-2 Block II) surface-to-air missiles with (SM-3 and SM-2(N)) and Phoenix, Sparrow and Sidewinder air-to-air missiles. Additionally, refinement of the DDG-51 class design to support a fiscal year 1985 authorization of a destroyer-sized, Battle Group AAW capable combatant to replace retiring, marginally capable ships and to achieve the larger goal of required force levels are highest priority. The program continues with procurement of close-in defense systems (Phalanx, NATO Seasparrow, SLQ-32); improved battlegroup command and control thru better coordination with *Aegis* introduction; BGAAWC; Link improvements; New Threat Upgrade to *Terrier* and *Tartar* cruisers; and EW improvements [deleted].

Specifically the fiscal year 1983 budget supports the following principal programs. In general these programs encompass RDT&E, OPN and WPN appropriations. Although not addressed herein, the fiscal year 1983 budget contains funding for operating and maintenance (D&MN) to support these programs as well as to improve sustainability and readiness.

AEGIS

Development of CG 47/Aegis product improvements and Vertical Launching System (VLS) for the 5-year shipbuilding program are supported with fiscal year 1983 funds at approximately $87M. Product improvement insures that the SCN addition of 17 guided missile cruisers (CG 47 Class ships) with the *Aegis* Weapon System will remain ahead of increased Soviet sophistication and diversity of threat. This will give us a total of 24 *Aegis* cruisers by the early 1990's. These ships, with vertical launchers, will substantially increase the area defense firepower of our battle forces against coordinated anti-ship cruise missile saturation attacks.

VLS

The Vertical Launching System is nearing production status for our CG 47 Class *Aegis* Cruisers, DDG-51, and for backfit into many of our DD-963 Class *Spruance* destroyers. It offers enhanced battle management through distributed offensive weapons including Tomahawk, AWS Standoff Weapons and Standard Missiles. Advantages over current trainable launchers include increased magazine inventories, firepower, enhanced faster weapon selectivity, greater survivability, relative simplicity, and lower manning. The VLS System is currently undergoing a highly successful evaluation at-sea in conjunction with the *Aegis* Weapon System and Standard Missile 2 (SM-2) on USS *Norton Sound*, with completion of at-sea testing expected in April. The fiscal year 1983 budget requests $33.9M for continued R. & D. for VLS integration of the Tomahawk missile, nuclear SM-2 and ASW Standoff Weapon. Additionally, there is $40.3M fiscal year 1983 OPN for procurement of one ship set of VLS for installation in a DD-963 Class ship.

Best Available Copy

DDG-51

The fiscal year 1983 funding for development of DDG-51 is $138.6M for a fiscal year 1983 lead ship authorization to support the 5-year shipbuilding program. This funding ensures that retiring Battle Group combatants will be replaced by a system that is capable. The DDG-51 Class surface combatants will be equipped with systems commensurate to the threat of the 1990's and beyond, including the *Aegis* SPY-1D radar and VLS. The DDG-51 Class will complement the CG 47 *Aegis* cruisers as battle force capable, destroyer-sized combatants, able to operate offensively in the presence of air, surface and sub-surface threats with strike, antisubmarine or amphibious forces.

MK-92 FIRE CONTROL SYSTEM

The fiscal year 1983 budget requests $9.6M for the MK-92 Fire Control System Improvement Program which enhances the AAW capability of the FFG-7 Class frigates. FFG-7 is a low-mix open ocean escort intended primarily to have an ASW mission but with a modest AAW capability. Unfortunately, from its first introduction, the MK-92 Fire Control System has not met this requirement in all environments. We have completed an extensive review and analysis of all possible corrective options including the use of an X-band phased array radar. Most options have too little performance gain and/or too high cost and/or risk. We conclude that the addition of a Coherent Receiver/Transmitter to minimize clutter would result in significant improvement and we plan to proceed with its development and testing. We have looked carefully at this X-band phased array upgrade for the FFG-7 class and conclude that it could provide additional capabilities to the FFG-7 against a new regime of anti-ship missiles and in a much tougher battle environment for which the FFG-7 class was not originally designed. Even though the improvement is recognized as significant it must be viewed as lower in priority than several other initiatives in AAW, thus it becomes a very real affordability issue, both in development and even more so in procurement and installation. Moreover, such an improvement would still not make the FFG-7 a viable battle force capable ship.

BGAAWC

The fiscal year 1983 budget requests $16 million for continuation of the Battle Group Anti-Air Warfare Coordination Program (BGAAWC). The goal of this program is to support the AAW Commander to effectively coordinate employment of Battle Group AAW assets so that airborne threats can be engaged and destroyed with minimal losses and least expenditure of force weapons. It is a phased development and implementation of displays, automated decision aids, procedures, and weapons system modifications to automate the process of data and information exchange and provide the best data in supporting a coherent AAW picture to all Battle Group capable ships and aircraft; along with supporting doctrines and procedures. The BGAAWC foundation is the superior fire control quality of the AEGIS SPY-1 radar and its associated combat weapon system. Without this development, in a complex AAW situation, the *Aegis* Weapon System could operate so rapidly that the other units in the Battle Group might be prevented from engaging targets, or could expend missiles on targets already being engaged by other AAW ships. However, not all targets engageable by an *Aegis* Cruiser would be optimum for a variety of reasons and could be more effectively engaged by other Battle Group ships and aircraft. As a result, *Aegis* cruise missiles could be committed/expended too early with needless expenditures of Battle Group SAM Inventory. Lack of coordination would be magnified in situations of jamming where the excellent anti-jam capabilities of the SPY-1 radar can't be shared by other battle force ships. Fiscal year 1983 funding will support demonstrations of coordination between fleet units, continued development of Battle Group Commanders Displays Group (BADG), decision aids and introduction of *Aegis* related battle doctrine providing a coherent air picture with introduction of continuous automatic GRIDLOCK and demonstration of an affordable fix to solve false target clutter of the SPS-48C radar. Longer range efforts in the years ahead will include developments such as remote targeting and inflight transfer of missile control to aircraft (guidance handover). We feel this program is a mandatory complement to *Aegis* and Battle Group operations to counter the increasingly complex threat of the 1980's and 1990's.

ELECTRONIC WARFARE

Fiscal year 1983 funding contains $13.6M in RDT&E and OPN for the AN/SLQ-32(V) electronic countermeasures set, now being installed in combatant ships. This

Best Available Copy

system was originally designed as an inter-ship Anti-Ship Missile Defense (ASMD) threat warning device. Fleet experience with the SLQ-32 [deleted]. Rapid design of these changes is considered critical to our AAW posture. It has also been demonstrated that improvements [deleted] with the targeting capability required by Fleet Commanders. Additionally, providing Combat Direction System integration to support hard-kill and control of the soft-kill decoy system are important initiatives in fiscal year 1983.

NEW THREAT UPGRADE (NTU)

Procurement of New Threat Upgrade (NTU) combat system will commence in fiscal year 1983 for *Terrier* cruisers and in fiscal year 1984 for *Tartar* cruisers. A funding level of of $114M in fiscal year 1983 is split between development and procurement of the first full production NTU systems. NTU responds to the requirements to eliminate the weaknesses in *Terrier* and *Tartar* Combat Systems to counter the [deleted] anti-ship cruise missile threat. NTU reaction time, increased firepower and improvements will improve detection ranges in ECM environment of 31 existing *Terrier* and *Tartar* cruisers [deleted]. Operational evaluation will be completed in fiscal year 1983 following land based testing and combat system installation in USS *Mahan* (DDG 42).

NTDS IMPROVEMENTS

Fiscal year 1983 funding of $57M is programed for improvements to the Naval Tactical Data Systems (NTDS) currently installed in 107 ships. Recent at-sea experience with the original late 1950's designed CP-642 computers [deleted]. In addition, obsolete SYA-4 display consoles must be replaced and the existing UYA-4 consoles modernized to ensure display effectiveness through the mid-1990's.

SELF-DEFENSE

Surface combatant self defense improvements will continue in fiscal year 1983 with the sixth year of procurement and installation of the Phalanx Close-In-Weapon System, and installation of 67 NATO Seasparrow Missile System (NSSMS) in battleships, carriers, destroyers (DD 963's), and mobile logistic support ships beginning with four NSSMS systems will be installed in fiscal year 1983. The RIM TM NSSMS ORDALT has been approved for multi-year contract at a $40M (31 percent) cost savings through fiscal year 1983 and including a fiscal year 1983 funding level of $35.3M. There are currently 28 Phalanx Systems installed in 13 ships at sea. By the end of fiscal year 1982 there will be 13 more ships at sea with 23 more systems installed and 38 additional ships to receive 64 systems. Fiscal year 1983 funding for $118.7M will support the procurement and installation for 39 Phalanx systems. Current R. & D. effort in Phalanx centers on development and test of the improved Block I System. The improved system increases rate of fire, magazine capacity and auto search capability [deleted]. Initial operational capability for the Block I system [deleted]. The fiscal year 1983 R.D.T. & E. funding of $1.4M is requested to continue this development.

Another anti-ship missile defense system being developed is the Rolling Airframe Missile (RAM). This infrared homing terminally guided missile is a tri-lateral Denmark, Germany, U.S. development with the latter two as major contributors. This missile in injunction with NATO Seasparrow could make a formidable ship self defense system. Our fiscal year 1983 request of $16.3M funds continues development of RAM including land based and at-sea testing. Operational evaluation of RAM will be completed in late 1983. Our German allies have committed RAM to several of their ships. Our continued development of this system is therefore important to both.

STANDARD MISSILE EVOLUTION

Standard Missile improvements continue with the development of SM-2 Block II completing in fiscal year 1983. With immediate production start-up, the Navy will achieve a major capability to effectively counter today's high altitude, high speed ASCM threat. SM-2 Block II is a high speed, mid-course guided missile which will provide a quantum improvement in capability over the Block I for *Aegis* cruisers and *Terrier* and *Tartar* New Threat Upgrade cruisers. In order to maintain U.S. dominance in the Area Defense Zone (within surface ship radar range) in the late 1980's and beyond, the next step in Standard Missile upgrade, SM-3, is being studie and will commence in fiscal year 1983 if initial estimates of capability improvement, cost and schedule are deemed achievable. The $16M fiscal year 1983 request will

Best Available Copy

allow us to complete the SM-3 missile definition and begin advance development in fiscal year 1983. It is vitally important that we move out boldly with the next firepower missile to meet the anticipated enemy threat potential in the late 1980's and 1990's. [Deleted] IOC is planned. Concurrent with the basic missile developments and procurements, a new tactical missile warhead for SM-2 is continuing development and will be procured commencing fiscal year 1985. This will replace aging tactical warheads in *Aegis*, *Terrier* and *Tartar* cruisers. The total Standard Missile Improvement Program development effort is at $50M level in fiscal year 1983. The fiscal year 1983 WPN request for Standard MR, SM-1 is $192.3M for 650 missiles. An additional $60.3M is requested to fund advanced procurement items under a multi-year contract. This missile is utilized by 58 U.S. Navy ships, including cruisers, destroyers, and frigates. For Standard MR, SM-2 we are requesting $122.8M for 150 missiles including 30 Block II pilot line missiles. For Standard ER, SM-2, $302.8M is required for 375 missiles. This is the first full production year for this missile which is already in service in *Terrier* cruisers and destroyers. In fiscal year 1984, we are requesting authorization to procure 700 Standard MR missiles, SM-1, at $216.4M, 300 Standard MR missiles, SM-2 at $208.7M, and 450 Standard ER missiles, SM-2 at $347.3M.

PHOENIX

The AIM-54 Phoenix, an all-weather missile, employs semiactive, mid-course and active guidance and is designed specifically for the F-14 aircraft. The Tomcat/Phoenix system has unique capabilities unmatched by an other air-to-air system. It is our only existing outer air battle capability. It has proven performance against high altitude and high speed targets, and a high degree of effectiveness during multiple and long range engagement.

A development program to update selected units of the Phoenix missile commenced in fiscal year 1977. This new missile, designated Aim-54C, incorporates state-of-the-art technology and provides increased missile performance, reliability and readiness. The first low-rate production of 60 Aim-54C missiles commenced in fiscal year 1980. The fiscal year 1983 RDT&E request is for $23.8M to support development completion and preliminary planning toward a Phoenix missile capable of higher speeds and increased range for the threat of the 1990's. The fiscal year 1983 WPN request is for $256.3M to procure 108 Aim-54C Phoenix missiles of which $34.2M is for advance procurement of long lead items required to support the fiscal year 1984 buy. For fiscal year 1984 we are requesting authorization for 360 missiles at $368.8M, which includes $45.8M for advance procurement.

IMPROVED SPARROW

The Aim/Rim-7M Sparrow III is a semi-active medium range intercept missile and will be employed by Navy F-4, F-14 and F/A-18 fighter aircraft and 95 surface ships having the NATO Sea Sparrow system.

The entire fiscal year 1983 request is for the 7M monopulse variant of the Sparrow missile and will include the third production run of the Rim-7M missile for sea-launched application in surface ships. The Aim-7M and Rim-7M missiles are nearly identical except for the folding wings, clipped fins and remote arming capability of the Rim-7M surface-to-air missile. The Aim-7M will be compatible with all aircraft currently approved to carry the Aim-7F air-to-air missile, and the Rim-7M will be employed with the NATO Seasparrow Surface Missile System.

The 7M variant of the Sparrow missile incorporates a new low altitude capable active fuze, and a new target seeker featuring improved missile guidance performance in electronic countermeasures and clutter environments. Performance limitations in these areas were inherent in the Aim-7F conical scan seeker design. The 7M derives its enhanced guidance through use of monopulse radar, but uses the same airframe, warhead, and rocket motor as its predecessor, the Aim-7F. We expect the 7M to be fully operational in the face of known self-screening electronic countermeasures, and provide improved capability in other ECM environments. Due to the Rim-7E production halt in 1971 the present Seasparrow inventory supports only 6 missiles in each 8-missile launcher with no missiles in shipboard magazine (should have 16). This severely detracts from our self-defense point/defense capability. Earliest achievement of adequate Aim-Rim-7M production rates is a key Navy goal. We are requesting $132.8M for 285 Aim-7M and 385 Rim-7M missiles in fiscal year 1983. For fiscal year 1984, authorization is requested for 1,220 missiles at $193.0M.

Best Available Copy

AMRAAM

As a follow-on to Sparrow, the Advanced Medium Range capability to perform this task has diminished in the past decade. There was a time when we were unchallenged at sea anywhere in the world. Now we are challenged everywhere and recent trends clearly have placed the balance of maritime power in doubt. Today, the Navy's long range ASUW/Strike capability resides almost solely in carrier based tactical air within the Carrier Battle Group. The majority of our deployed strike weapons (Harpoon, Standard Arm, Walleye, MK-48 Torpedo, level of effort free fall munitions and projectiles) require most launch platforms to enter enemy defense envelopes to launch. Strike aircraft and missiles will have to fly against increasingly sophisticated Soviet surface-to-air missiles and guns both ashore and aboard Soviet surface combatants. New systems, such as the SA-N-6 surface-to-air missile system found on the *Kirov*, have longer range, improved low altitude capability, and overlapping layers of defense. Concurrently, Soviet land targets are becoming increasingly hardened and well defended. Their ships are being designed with much greater survivability features including multiple SAM systems. [Deleted.] Our Surface Action Groups, used so widely in all but high threat areas, currently have no long range strike capability.

The principal threat posed by Soviet surface forces to U.S. Navy Battle Forces is, and will continue to be, the anti-ship cruise missile (ASCM). These ASCM's, which are launched from submarines and aircraft as well as surface ships, fly various flight profiles and altitudes [deleted] at speeds [deleted] to supersonic and at ranges [deleted] to 300NM. The SS-N-19, carried by the *Kirov* nuclear powered cruiser and the *Oscar* SSGN, is now estimated to be operational. *Kirov* carries 20 of these missiles, which have a range [deleted]. Another ASCM [deleted] will be carried by the *Sovremennyy* DDG [deleted].

New and vastly improved Soviet shipboard Sam systems also constitute a threat to tactical aircraft and cruise missiles. The SA-N-6 system, carried on the *Kirov* [deleted]. Thus, the Soviet Union is continuing to distribute highly capable long range strike weapons and air defense systems.

Against this high threat environment we must insure sea control and power projection by modernizing our ASUW/Strike forces in such a manner that our Battle Groups can fight at the time and place of our choice without experiencing severe attrition. Our principle objective is to regain maritime superiority. To do so within the ASUW/Strike mission area we must: [deleted].

The fiscal year 1983 budget continues our efforts to achieve these objectives [deleted]. Central to this initiative is the introduction of Tomahawk anti-ship and land attack cruise missiles into our submarine, surface ship, and tactical air forces. We now possess the proven technology for a revolution in seapower through the broad distribution of offensive weapons [deleted].

Cruise missiles alone cannot win an engagement against a concentrated force, but they can substantially contribute to increasing the survivability of other strike assets and often release these currently overburdened assets to other equally critical missions—cruise missiles are force multipliers. In sum, the fiscal year 1983 budget:

Continues and/or increases procurement of offensive weapons (MK-48 Torpedo, Harpoon, Tomahawk, Harm, Walleye, Maverick and level of effort conventional ordnance).

Continues joint development of the air-launch Tomahawk Medium Range Air-to-Surface Missile (MRASM).

Continues development and procurement of Tomahawk Launch and Weapon control systems, for installation on major surface combatants (BB, CGN, DD-963, and SSN-637 and SSN-688 class submarines).

Continues development of the Tomahawk-capable Vertical Launch System for installation on DD-963, CG-47, DDG-51 surface combatants and SSN-688 class submarines.

Continues development and procurement of supporting ASUW/Strike battle management, surveillance, and support systems, including Tactical Flag Command Centers, Tomahawk Land Attack Mission Planning Centers, OTH-T and area surveillance systems. Outboard HF/DF systems, and supporting communications systems.

Continues survivability, guidance, targeting and lethality upgrade initiatives as preplanned product improvements for Harpoon, Tomahawk, Walleye, MK-48 Torpedo, and gun systems.

Specifically, the fiscal year 1983 budget supports the following major surface combatant and submarine programs that contribute to the ASUW/Strike mission area. In general, these programs encompass RDT&E, OPN, and WPN appropriations. Also included are mutually supportive air-launched weapon programs that contribute to

Best Available Copy

overall Battle Group strike posture. Vice Admiral Wesley McDonald will address all tactical air programs during testimony before the Subcommittee on Tactical Warfare. Although not detailed herein, the fiscal year 1983 budget provides the necessary O&MN funding for these programs.

TOMAHAWK CRUISE MISSILES

The Tomahawk cruise missile is a long range missile with land attack and antiship capability, sized to fit submarine torpedo tubes as well as surface ship and submarine vertical launchers. The Tomahawk cruise missile is propelled in flight by a small turbofan engine. The antiship version uses a modified Harpoon guidance system and the land attack version has inertial and terrain contour matching and digital scene matching corelation guidance system. The anti-ship version (BGM-109B, 250NM) is fitted with a high explosive warhead while the land attack version is fitted with a high explosive conventional warhead (BGM-109C, 472-600NM) or a nuclear warhead (BGM-109, 1350NM). $292.2M is requested for fiscal year 1983 to fund the procurement of 120 Tomahawk missiles. Authorization of $600.0M for 312 missiles is requested for fiscal year 1984.

The fiscal year 1983 budget requests $18.0M RDT&E to initiate improvements to the basic Tomahawk missile. [Deleted.] This capability is planned to be available for use in the fleet late in calendar year 1983. [Deleted.]

This development will begin in fiscal year 1983 [deleted]. Initial operational capability is planned [deleted].

TOMAHAWK WEAPON SYSTEMS

To achieve a broadened distribution of offensive weapons the fiscal year 1983 budget request $109.7M OPN for the procurement of Tomahawk Armored Box Launchers (ABL) and Common Weapon Control Systems (CWCS), including supporting communication and inertial navigation equipments, for dual ABL-configured installations on three DD-963 and two CGN class ships in fiscal year 1984/85 and one trainer, plus three CWCS for three fiscal year 1986 DD-963 tomahawk-capable Vertical Launch Systems (VLS) installations. The surface launched Tomahawk initial operational capability (IOC) for ABL launchers [deleted] for anti-ship Tomahawk (BGM-109B) and conventional land attack Tomahawk (BGM-109C), and [deleted] for nuclear land attack Tomahawk (BGM-109A). To completion in fiscal year 1987 the Tomahawk ABL program is planned for [deleted] DD-963, [deleted] CGN and [deleted] Battleships [deleted] $47.3M is requested to continue the procurement of SSN Tomahawk combat control systems and [deleted] SSN-688 vertical launch systems for backfit installation in fiscal year 1987. Submarine Tomahawk IOC [deleted]. For BGM-109B/C and [deleted] for BGM-109A.

The fiscal year 1982 Amended Budget initiated procurement of Tomahawk-capable Vertical Launch Systems (VLS) for DD-963 class surface ships and appropriated SCN funds to install VLS on new construction SSN-688 class submarines for IOC [deleted]. The VLS surface ship program increase Tomahawk capable launch slots and ultimately provide the firepower volume needed by our battle groups to effectively execute conventional land attack cruise missile strikes. The VLS capability on SSN-688 submarines adds [deleted] additional missile tubes for Tomahawks. The initial operational capability for vertical launched Tomahawk is fiscal year 1986 on DD-963 class surface ships and SSN-688 class submarines and fiscal year 1987 on CG-47 class AEGIS cruisers beginning with CG-52. The fiscal year 1983 budget requests $63.2M to continue VLS-Tomahawk-CWCS integration development and procure one DD-963 VLS launcher consistent with current launcher production capacity. A total program of 24 DD-963 VLS-Tomahawk systems are planned. All SSN-688 class submarines will receive VLS installations, either in new construction (SSN-719 and later) or overhaul backfit (SSN-688-718).

In addition to the procurement of Tomahawk Common Weapons Control Systems and Combat Control Systems which provide surface ships and submarines the capability to receive, process, collate and target both offboard and organic OTH data as previously described, the fiscal year 1983 budget requests $31.2M to continue the procurement of long range passive surveillance and targeting Outboard HF/DF equipments. Specifically, [deleted] Outboard Phase I ship sets are procured [deleted].

HARPOON ANTISHIP CRUISE MISSILE

The Harpoon Cruise Missile was designed to provide a ship, air and submarine-launched, all weather, 60NM antiship cruise missile effective against enemy surface combatants and merchant shipping. The radar guided Harpoon was first operational

Best Available Copy

in the fleet in July 1977, installed in both surface combatants and submarines. An alternate version has been adapted for launch from P-3 and A-6 aircraft and achieved initial operating capability in 1979. The missile was granted full approval for service use in February 1981. Currently we are 27 percent deficient in total platform fill. To help alleviate this deficiency and improve readiness the Navy attempted to increase production to 340 missiles in the fiscal year 1982 Amended Budget; however, due to an emergent funding requirement production remained at 240 missiles in fiscal year 1982. We plan to increase production to 340 missiles commencing in fiscal year 1984. To provide adequate numbers of this highly reliable and effective weapon to the fleet, the Navy requests $236.1M for 231 missiles in fiscal year 1983 and authorization of $339.0M for 340 missiles in fiscal year 1984.

In order to maintain the survivability of our Harpoon inventory through the 1980's and improve target selection flexibility the fiscal year 1983 budget requests $15.3M to incorporate product improvements into the Harpoon missile and Command Launch Systems to provide a [deleted] trajectory; increase in range [deleted] through a fuel change [deleted] terminal trajectory, passive angle target tracking, hardened fuze, and search pattern sweep direction control to improve target selection. This modification will be incorporated into all fiscal year 1983 production and selectively retrofitted during scheduled 36 months missile maintenance intervals. Overall fleet inventory levels will not be degraded. Ultimately, all U.S. Harpoon missiles will receive this modification, designated Block 1C. [Deleted.]

In order to harden the existing Harpoon warhead the fiscal year 1983 budget requests $1.9M.

AIR-LAUNCHED ASUW/STRIKE WEAPONS

Air-to-surface strike and anti-surface warfare weapons include Walleye, Harpoon (previously discussed), Harm, MRASM and conventional free fall munitions. The Walleye product improvement program (fiscal year 1983 $5.0M RDT&E) and extended range data link conversion (fiscal year 1983 $13.2M OPN) will provide an evolutionary modernization of the basic Walleye's with increased stand off range and enhanced operational utility.

The Navy has been attempting to fulfill a long standing requirement for a Medium Range Air-to-Surface Missile (MRASM) that will permit strike aircraft to attack ship and land targets from well outside the target's defensive umbrella. In July 1981, Congress directed the Navy to develop the AGM 109L to fill a standing operation requirement for a MRASM. [Deleted.] The fiscal year 1983 budget request $19.9M RDT&E to provide development of all components common to both Navy and Air Force MRASM systems.

Harm is a high speed, anti-radiation missile designed to destroy or suppress land or sea-based radars supporting enemy air defense systems. Harm performs this function by homing on and destroying the radars associated with enemy [deleted] missiles and radar directed anti-aircraft guns. The current inventory of the anti-radiation missiles, Shrike and Standard Arm, were used extensively in the Southeast Asia and Mideast wars and proved their utility in both conflicts. [Deleted.] Harm will be deployed on the A-7E, F/A-18 and A-6 aircraft and will correct the operational deficiencies prevalent in Shrike [deleted]. In fiscal year 1983 authorization for 208 missiles at $176.8M is requested. Authorization for 250 missiles at $155.3M is requested for fiscal year 1984. This includes $40.0M for funding of the Navy half of $80M required in fiscal year 1983 to complete development of a second source of Harm. Air Force has included $40 million in their fiscal year 1984 budget for this purpose.

Additional conventional munition developments (fiscal year 1983 $7.9M RDT&E) will provide an upgrade to munitions such as bombs, bomb fuzes and aircraft gun ammunition.

ANTISHIP TORPEDO WEAPONS

The MK 48 Torpedo, which has been in production since 1972, is a submarine launched, acoustically guided dual-purpose anti-submarine and anti-surface ship weapon. This torpedo is the primary tactical weapon for our attack submarines and is carried by strategic missile submarines as a self-defense weapon. Approximately 2,700 MK-48's have been delivered to the Fleet and about 300 more are in various stages of production and proofing. The fiscal year 1983 request is for $124.3M for the procurement of 120 torpedoes. Authorization in fiscal year 1984 for 144 torpedoes at $132.6M is requested. In addition, the budget supports procurement of essential MK-48 torpedo modifications necessary to maintain the material reliability of the MK-48 torpedo inventory while providing an interim capability against the Soviet

Best Available Copy

high speed deep diving submarine. We expect to initiate limited procurement of long lead material for the MK-48 Advanced capability modification (ADCAP) to counter the projected Soviet threat beginning in fiscal year 1984.

GUN WEAPON SYSTEMS

The budget requests $22.8M to complete system improvements and to provide for modernization of gun fire control systems. Development programs will continue target acquisition and processing improvements for the MK-68 and 86 gun fire control systems to keep pace with the growing complexity of close-in engagements. Concurrently, previously approved system improvements will expand capabilities of both major gun fire control systems with digital processing for the MK 68 and improved program capability for the MK 86; these capability expansions support system growth well into the next decade. The fiscal year 1983 program will procure two MK-68 digital systems, 14 MK 86 hardening/survivability ORDALT kits and one MK-86 system expansion. In addition, $4.3M is requested in the fiscal year 1983 budget to continue research in explosives technology. The specific focus is the development of insensitive explosives for propellant charges and projectile warheads which would minimize ship damage from sympathetic detonations following major shipboard fire or combat damage.

$1.0M is requested in fiscal year 1983 to complete the development of the Five Inch Semi-Active Laser Guided Projectile. This projectile, fired from the five inch MK/45 light weight gun is a rocket sustained terminally guided projectile capable of highly accurate delivery against point targets at sea and ashore. Although the guided projectile has successfully completed operational evaluation, the Navy has made a decision to complete development but not procure guided projectiles for fleet use at this time. The primary reason for this decision was affordability due to a large increase in unit cost over earlier estimates. The $1.0M requested in fiscal year 1983 will complete Engineering Development of the 5-inch guided projectile and provide a full data package for the baseline round should guided projectile procurement be initiated in the future.

The MK-75 76 MM Gun Mount is a minor caliber, duel purpose, high rate of fire gun. Because of its performance, light weight and low manning requirements, the MK-75 has been chosen for the Navy's FFG's (Guided Missile Frigate), PHM's (Partrol Combatant) and the Coast Guard's WHEC-378 class cutters (Midlife Conversion). The mount has been operationally tested and Provisional Approval for Service Use was granted in September 1975. In fiscal year 1983, $10.7M is requested for procurement of three mounts for the first Coast Guard *Hamilton* class cutter to enter overhaul. Authorization for $17.4M for five mounts in fiscal year 1984 is requested to continue the *Hamilton* class overhaul program.

COMMAND AND CONTROL

Effective Command and Control continues to be the force multiplier that permits the realization of the full capability implicit in our weapon systems and the synergism achieved by operating complementary systems. Effective command and control is necessary in all warfare areas. The rapid growth in the size and capabilities of our potential adversaries has resulted in a corresponding reduction in the reaction time available to our forces. As a result, the fleet is evolving into an increasingly automated force with respect to collecting, exchanging and managing battle information. Among our principal efforts in the fiscal year 1983 budget is to provide Navy Battle Groups the C^3 capabilities they need to fight and win at sea are programs designed to improve our capability for: exchange of critical data among battle group units [deleted] improved long range weapon targeting; improved capabilities for battle group commander battle stations; timely tactical intelligence; indications and warning; and enhanced capabilities to counter enemy command and control.

Key to our success in AAW is the destruction of aircraft capable of launching anti-surface cruise missiles before they can release their weapons. JTIDS will provide a jam-resistant, secure digital data link and voice capability for air intercept control and air surveillance reporting. JTIDS' jam-resistance will permit effective control of interceptors and airborne Tactical Data System aircraft—the E-2C—[deleted] as a near term improvement to our ability to conduct AAW in the presence of enemy jamming, we are requesting funds for an anti-jam applique to our surface line of sight (WSC-3) voice systems which will be compatable with the [deleted] applique developed for use with the ARC-182 radio being installed in our airborne early warning and fighter aircraft. This will provide a measure of anti-jam protection for the critical voice link [deleted].

Best Available Copy

In anti-surface warfare, our major command and control thrust in fiscal year 1983 will be the continued development of Over-The-Horizon Targeting for the Tomahawk missile. Our efforts will include support of operational testing and evaluation, development of required data management and display systems, and improved communications. We will also be working on computer software programs to improve our capability to correlate and exchange Over-The-Horizon Targeting data betwen our Command and Control centers both ashore and afloat.

The Tactical Flag Command Center (TFCC) program will provide to our Battle Group Commander a battle station capable of automatically displaying externally generated threat and ocean surveillance information and real-time information generated by the organic sensors of the ships and aircraft of the Battle Group. In fiscal year 1983, we will continue our program of installing both battle stations and data display systems in our carrier flagships. Specifically, in fiscal year 1983, we will install these improved capabilities in USS *Nimitz* and USS *Constellation* and complete installation of the battle station and display system in USS *America*. We will also continue our program of software development for improved data display capability and initiate procurement of large screen displays for TFCC spaces.

We have been actively involved for several years with a number of programs intended to provide improved surveillance. We need to expand the outer limit of the battle space in order to allow early indication and warning of possible enemy attack, and provide increased capability for long-range weapon employment and early reduction of enemy anti-shipping missile platforms. The Integrated Tactical Surveillance System (ITSS) is a concept development for a system to provide aircraft and ship surveillance, targeting and warning to tactical users on a worldwide, day/night, all-weather basis. The Congress has supported this effort in the past and your continued support in fiscal year 1983 is requested.

Lastly, we are vigorously pursuing the development of capabilities to complicate the enemy's defensive problem and to dilute the effectiveness of his offensive forces through command, control and communications countermeasures (C^3CM). We must dominate electronic warfare, and frustrate and mislead the enemy through perplexing countermeasures if we are to operate successfully in a highly sophisticated and complicated warfare environment. Your continued support will allow us to do this.

MINE WARFARE FORCES

Mine Warfare poses a serious threat to the free movement of commerce and to the ability of peaceful naval forces to execute their assigned tasks. The Soviet Union is believed to possess large stocks of modern sophisticated mines which, if sown and not safely cleared, could deny access to harbors, straits and large areas on the continental approaches. For the past quarter century, the U.S. Navy has had to rely solely on a small group of ocean minesweepers, built in the mid to late 1950s. In the recent past, this force has been augmented by a mine sweeping helicopter capability. Currently there are 25 MSOs, 3 in the active forces and 22 in the Naval Reserve Force, and 23 MCM helicopters. As shown in the viewgraph these ships are rapidly approaching the end of effective service life and require replacement as soon as possible. Fortunately, Congress appropriated funds in fiscal year 1982 for the lead ship of a new class of mine countermeasures ship, the MCM. An acceptable risk force will require a total of 14. These ships will be augmented by a low mix minehunter, the MSH, which will be introduced in the fiscal year 1984 budget. Seventeen MSHs are planned for construction. The 31 mine countermeasures ships represent a bare minimum requirement and dictate sequential clearance of U.S. waters and heavy reliance on our allies to keep their own waters swept. We now consider that we are on the right course with the proper mix of ships and helicopters to meet our mine countermeasure requirements with acceptable risk.

Best Available Copy

CONGRESSIONAL INTEREST TOPICS

TOPIC	PROBLEM
SEAFIRE/GP	
● PROGRAM TERMINATED	● DIFFERENT FROM SECNAV COMMITMENT ● SEAFIRE/GP REMAINS DESIGN BUDGETED WITHIN DDG 51 ● REPLACEMENT FOR GUNFIRE CONTROL SYSTEM TBD
DESIRED BUT UNAFFORDABLE	
VLA	
● PROGRAM TERMINATED	● DIFFERENT PERCEPTION OF CONGRESSIONAL DIRECTION
● CASOW INCORPORATES VLA CAPABILITY	● LATE CASOW INTRODUCTION
TIMING	
SQS-53C	
● COST/SCHEDULE	● PERCEPTION THAT SCHEDULE WILL NOT MEET LEAD SHIP
REDUCED CONGRESSIONAL FUNDING FORCED PROGRAM RESTRUCTURING	

In fiscal year 1982 the Congress appropriated $99.7 million for the lead ship of a new class of mine countermeasures ship and the fiscal year 1982 Supplemental added $19.0 million. This year we are requesting $371.6 million for four follow on ships. This represents a 1-year acceleration of the MCM program and is a reflection of the severity of the mining threat which we could face. These ships will replace the aging fleet of MSOs currently in service. They are designed to maximize shipboard performance while maintaining low acquisition and operational expenditures. The command and control suite will be state-of-the-art; capable of automatically integrating, processing and simultaneously displaying data from all ship's sensors; capable of storing and retrieving data for use by own ship and other fleet units for channel conditioning, mine hunting, neutralization and mechanical minesweeping operations. It is planned to construct 14 ships of this class.

In addition to a revitalized ship construction program, we are continuing procurement and research in the mine countermeasures area. Programs Include:

SUBMARINE LAUNCHED MOBILE MINE (SLMM)

This year we are requesting $22.9M for the procurement of 334 Submarine Launched Mobile Mines (SLMM). [Deleted.]

CAPTOR

The procurement of en*CAP*sulated *TOR*pedoes (Captor) is continued. Captor is a moored influence mine for use in deep water utilizing a modified MK 46 torpedo as a payload, to deny enemy submarines free access to open ocean areas. This year we are requesting $156.2M for the procurement of 500 Captor weapons in the WPN appropriations.

QUICKSTRIKE

The procurement of the Quickstrike series of aircraft deployed bottom mines, for use in shallow water [deleted] including four types of Target Detection Devices (TDD), compatible with the general purpose aircraft deployed iron bomb, and a new [deleted] mine case (MK-65). This year we are requesting $32.9M in the OPN appropriation which provides for the procurement of 1599 TADD and 579 MK-65 bombs.

MINE DEVELOPMENT

We are requesting $19.8M in the R.D.T. & E. appropriation for continued development of the new family of mines, [deleted].

INFLUENCE MINE COUNTERMEASURES

The development of Navy and Navy/NATO equipments for high speed neutralization of pressure, acoustic, and magnetically influenced mines. This new R.D.T. & E. funding request is for $5.8M in fiscal year 1983.

SURFACE MINE COUNTERMEASURE

The development of new mine hunting, sweeping and neutralization equipments to be used aboard the two new classes of mine countermeasures ships, replacing current obsolete equipments, and effectively countering the modern mine threat in CONUS waters and key chokepoints and Sea Lanes of Communication (SLOC). For fiscal year 1983 we are requesting $31.6M in R.D.T. & E. funds to support surface mine countermeasures development.

AIRBORNE MINE COUNTERMEASURES

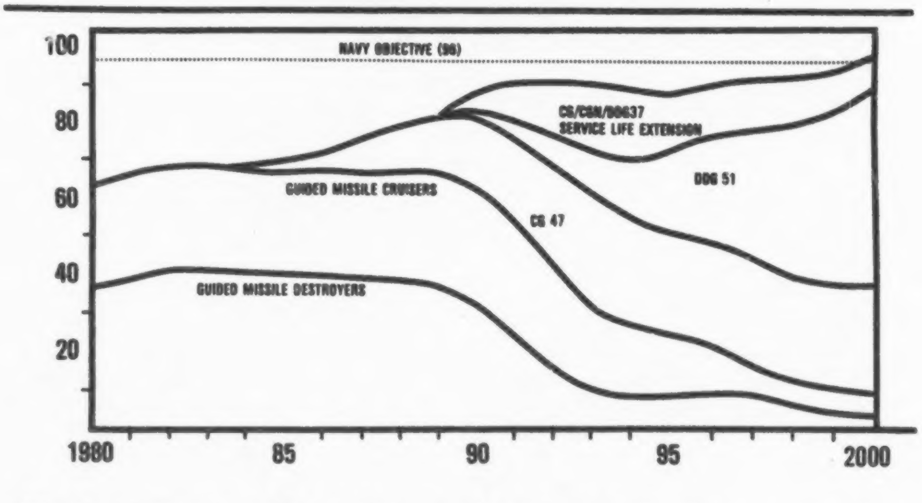
The development of new mine hunting, sweeping and neutralization equipments to be used against the modern mine threat, in support of precursor sweeping of sensitive mines in CONUS channels, and a viable short-notice rapid deployment contigency force, to clear key chokepoints and Sea Lines of Communications (SLOC). The request this year is for $21.5M of R.D.T. & E. funds.

DDG-51 DESIGN

Perhaps no single ship class is more important to the future of the U.S. Navy than the DDG-51. Not only will it provide *Aegis* technology on large numbers of platforms but it is required as the numerical replacement in the late 1980s and throughout the 1990s for the large number of existing DDG and destroyer class ships which will be reaching the end of their effective service life at that time.

This viewgraph depicts the precipitious decline in guided missile cruisers and destroyers commencing in fiscal year 1989, and graphically demonstrates the urgent need for commencement of the DDG-51 construction program in fiscal year 1985 followed by rapid build up to five or six units a year.

**COMPOSITE
GUIDED MISSILE
CRUISERS AND DESTROYERS**



We are currently in the preliminary design phase for the lead ship. Contract design will commence in fiscal year 1983.

The warship design process consists of a sequence of steps each involving an increasing level of detail and finer definition of features of the new ship. These steps are feasibility studies, preliminary design, contract design, and detailed design (construction follows based on this design and contract specification). Feasibility studies are conducted for the purpose of trading off major military requirements versus ship size and cost. The starting point is guidance characteristics and requirements furnished by the CNO. Typical trade-off issues are weapons, sensors, speed, endurance and degree of ship protection. Risk areas are identified. The feasibility studies for the DDG-51 through 1980 were aimed principally at selecting the combat system. By the end of 1980 the sensors and weapons control subsystems and the weapons were all identified for the DDG-51 combat system. During 1981, feasibility studies continued on the hull, machinery and electrical features of DDG-51. We have now completed all of these trade-offs and this month will start preliminary design. The preliminary design results in a general arrangement, list of major equipments and refined weight estimate. Major components selected must be of proven design and service tested. Preliminary design typically require up to 5,000 mandays over four to seven months. Preliminary design of the DDG-51 will be completed by the end of the second quarter fiscal year 1983. Contract design produces a ship description in the form of specifications and drawings that are complete to the extent that an acquisition contract can be awarded based on the completed design package. Engineering trade-off studies to optimize the various ship systems including hull appendages are conducted. Eight hundred specification pages and 100 drawings are normal for a combatant of the size of the DDG-51. A detailed weight estimate and master equipment list are also produced. Typically up to 60,000 mandays over 10 to 16 months are expended. Additionally, it is normal to conduct model tests, build mockups and initiate land based test sites during contract design. Contract design of the DDG-51 is scheduled to start in early fiscal year 1983 and complete in mid-fiscal year 1984. Detailed design will be performed by the lead ship builder for DDG-51. This will not start until fiscal year 1985.

During 1981 several competitive contracts were awarded to industry. Gibbs and Cox is the Systems Engineering Agent responsible for the integration of the various subsystems into the overall ship design. RCA is the Combat Systems Engineering Agent to develop the design of the combat system including functional descriptions, definition of the interfaces, risk identification and risk reduction planning. This effort will later include building and testing systems, development of control systems at a land based engineering facility and installation and checkout of the combat system of the lead and follow ships. Producibility study contracts were awarded to seven surface combatant shipbuilders to allow the Navy to obtain shipbuilder input in a variety of discrete design areas in order to enhance the productibility of the ship. This early involvement of the shipbuilders also serves to keep industry current with the design and thereby facilitate competitive bidding on the construction contract for the lead ship of the class.

The lead ship detail design and construction contract will be a sole source negotiation with the prospective lead shipbuilder with contract award by January 1985 and ship delivery by July 1989. It is planned that a second source for DDGs will be obtained by fiscal year 1987 which is the first year that multiple ships are expected to be authorized and appropriated.

The DDG-51 design incorporates a modular concept for the installation of three weapons stations based on an engineering effort we have been developing separately called "Ship Systems Engineering Standards (SSES)." SSES concepts for modularity of weapons and electronics spaces are being utilized in our ship designs as rapidly as they are technically feasible. To test the validity of these concepts prior to their incorporation in a production design, a notional design called the Mid-Size Combatant was developed to a degree suitable for making gross trade-offs. This has proven to be valuable in limiting the disruption in the DDG-51 design development. The modular concept provides the potential to change weapon or electronics stations without expensive rip-outs and auxiliary systems modifications. Not all of these concepts are sufficiently developed to be used on DDG-51. NAVSEA will continue to develop the SSES concept and apply it to new ship designs or alterations where beneficial. The products of the NAVSEA SSES effort which are essential to incorporate these concepts in the DDG-51 design are as follows:

(a) Preliminary zone standards will be available next month.
(b) Preliminary weapons module standards in October 1982.
(c) Test and evaluation requirements in October 1982.
(d) Preliminary electronic module standards in December 1982.
(e) Preliminary topside standards in June of 1983.

The DDG-51 preliminary design started with technical characteristics that includes the SPY-ID radar (four MgW transmitter), the SPS-67 surface search radar, three SPG-62 illuminators, which could be upgraded to agile beam illuminators, the SLQ-32 Electronic Warfare System, an SQS-53 series sonar, the SQR-19 TACTASS, Lamps shipboard electronics and control, and a helo deck with HIFR. The weapons will include two vertical launch systems, one 64 cell (B Module) and one 32 cell (A Module). All cells capable of carrying the SM-2 (MR), Tomahawk or vertical launches ASW weapons. Additional armament includes two quad Harpoon launchers, one 5 inch 54 gun (A Module) with gun fire control system, two MK-32 torpedoe tubes, and two MK 15 Phalanx point defense systems. Planned full load displacement is 8500 tons including growth margin. The ship will utilize four LM2500 gas turbine engines with controllable reversible pitch propellors to develop 80,000 shaft horsepower with the potential to upgrade to 100,000 SHP. The electrical generation system is composed of four 2500 kw Allison 501-K34 gas turbine generators with all electrical auxiliaries. Accommodations will be provided for 336 total crew. Paralleled developments, on Racer, improved gas turbine efficiency and reversing reduction gears are budgeted. When any of these improvements complete developments, land based testing and at sea evaluation, they can be included in future DDG-51 class ships with minimum design changes.

This year we are requesting $142.6 million in the RDT&E appropriation and $12.4 million in the SCN appropriation (Ship Design) for the continued development of DDG-51. We have an outstanding ship on the drawing board. We must proceed to translate those drawings into an outstanding ship at sea.

GUIDED MISSILE FRIGATE—FFG-7 CLASS

The fiscal year 1983 budget request continues the procurement of the FFG-7 class frigate with two additional ships and a funding requirement of $666.4 million.

These frigates are intended to accompany amphibious forces, underway replenishment groups, and serve as convoy escorts to provide protection against air, surface, and subsurface threats.

The FFG-7 class frigate is equipped with a general purpose missile launcher which can fire the Harpoon surface-to-surface missile for offensive operations against surface ships as well as the SM-1 medium range missile against aircraft and missile targets. Anti-submarine warfare equipment includes the long-range Tactical Towed Array System, TACTAS, backed up by a hull-mounted sonar and with facilities to accommodate two Lamps MK III helicopters for long-range detection and torpedo attack against submarines. Other armament includes a 76MM dual-purpose NATO standard gun, a rapid-fire close-in point defense weapons system, and anti-submarine torpedoes. It contains survivability features superior to existing frigates.

Forty-eight FFG-7 class ships have previously been authorized, including three in the fiscal year 1982 budget.

SALVAGE SHIP—ARS

The fiscal year 1983 request contains funds for the fourth new construction Salvage ship. This class is essentially a repeat of the successful ARS-38 class, updated to state-of-the-art equipment, habitability and environmental standards. A total of five ships is planned. $84.0 million is requested in fiscal year 1983 for this ship.

FLEET OILER—TAO-187 CLASS

The fiscal year 1983 budget requests $320.0 million for the construction of the second ship of the TAO-187 class. This includes $109.8 million in long lead funds for the third, fourth and fifth ships of the class, which will be contained in the fiscal year 1984 budget request. This class has been approved by the Department of Defense for a five ship multi-year initial procurement, which will result in a saving of over $50.0 million in acquisition costs of the first five ships. The TAO is a high priority program because we urgently need to replace obsolete fleet oilers to achieve force levels sufficient to meet wartime requirements so critical to our Battle Forces at sea. Although these ships will be primarily constructed to commercial standards to reduce cost and accelerate construction, they fully meet our military requirements and could, in the event of loss in battle of our Battle Group station ships, provide partial replacement support.

HOSPITAL SHIP—TAH

In the original fiscal year 1982 request, Navy included $10.0 million for advance procurement for acquisition and conversion of the SS *United States* as a Hospital

Ship. This request was later deleted as the availability and conversion cost of the SS *United States* became questionable. The $300 million requested in the fiscal year 1983 budget is the first increment of a DOD estimate of $560 million over 2 years (fiscal years 1983-1984) to permit acquisition and conversion of two or more hospital ships with a combined capacity of at least two thousand beds and twenty-four operating rooms. Initial bids from prospective vendors have already been requested. The lack of afloat medical care is widely recognized as a most serious deficiency in our ability to support combat operations ashore, employing either amphibious or RDJTF forces. Afloat medical care in the form of hospital ships is a part of the overall continuation of care needed to handle battle casualties which begins with the combat unit itself and extends through fleet hospital units ashore to CONUS hospitals for eventual recovery of the most serious combat casualties.

[Questions submitted for the hearing record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR WILLIAM S. COHEN

PROPULSION R. & D.

Senator COHEN. What is the future of steam propulsion for U.S. Navy warships? Is it intended that all future warships will be powered either by gas turbine or by nuclear power?

Admiral WALTERS. Propulsion system selection is done on a case by case basis for all warships. The Navy will be heavily into steam propulsion for the foreseeable future. We must remember that even with nuclear propulsion, there is basically only the method of heating the water to make steam that differentiates fossil fuel steam propulsion from nuclear. The steam turbine and ancilliary pump technology required is similar. Additionally, steam-powered hybrid propulsion systems are being developed (e.g., Racer). Conventional steam, nuclear, gas turbine, diesel and combinations of the aforementioned remain viable propulsion system candidates.

Senator COHEN. Is the Navy examining the use of hybrid power plants, such as combined steam/gas turbine, for any ships?

Admiral WALTERS. Absolutely. As a matter of fact, the propulsion system selected for the new DDG-51 class ship is a combined gas turbine/steam hybrid. This was selected after examination of over 100 candidate propulsion systems. Basically the exhaust heat of the gas turbine generates steam that powers a turbine driving into the same reduction gears driven by the gas turbine. This provides additional power from the same amount of fuel, or for a required amount of power, less fuel is consumed.

Senator COHEN. What are the Navy's priorities for funding of R. & D. for propulsion (excluding nuclear)? What are the areas of interest which are not being funded?

Admiral WALTERS. Propulsion funding enjoys a fairly high priority. Highest priority is development of propulsion improvements for the DDG-51 Class. This includes the development of the Racer System, a reversing reduction gear, gas turbine generator upgrade, and LM-2500 gas turbine power output increase and fuel efficiency improvement. Development funding for a new electric drive propulsion system was recently doubled by DoD over the projected five year program. Additionally, an R. & D. gas turbine Component Improvement Program steadily improves the potential for the realiability and maintainability of our propulsion engines.

The areas of interest that are currently not being funded are development of compact gears, cruise gas turbines using regenerate or simple cycle with Racer, and development of a family of marine gas turbines of 1,000KW, 3,000KW and 50,000 HP engines. It is planned to undertake some of these as new starts possibly in fiscal year 1985.

Senator COHEN. What funding is in the budget for development of improved diesel propulsion for Navy support ships?

Admiral WALTERS. There is $3.2M in the current budget for the final stages of the testing of the new diesel propulsion system for the Dock Landing Ship (LSD-41) class. This is the culmination of a four year development and test program that introduces medium speed diesel propulsion to our Navy-crewed ships. Over 98 percent of all commercial new construction ships are being ordered with diesel propulsion systems, basically because they are fuel efficient, easily automated, and are capable of burning the heavier residual fuels. Many of our support ships, the Navy Fleet Auxiliary Force, are being built to commercial specifications and are crewed by civilians employed or contracted by the Military Sealift Command. It is anticipated that many of these ships will be powered by diesel propulsion systems, a number of which are readily available without further development from commercial sources.

MEDICAL R. & D.

Senator Cohen. The Navy is requesting $8.8 million for a program called "Medical Development (Advanced)." It contains a large number of individual projects. Please provide a comprehensive break-out of the funding of each of these projects. Also, justification is requested for the following individual projects: "disposition criteria for * * * physical fitness enhancement;" "computer-managed weight reduction;" "design criteria for the development of sonar headphones;" and "development of a chemically contaminated warfare-conventional casualty prediction model for medical manpower and logistical planning for * * * combat operations in a chemically contaminated environment."

Admiral Walters. The fiscal year 1983 funding for individual projects within the program element is as follows:

Project M0095 Fleet Health Technology.—Animal model for testing procedures for managing cold weather trauma casualties: $310K; clinical trials of freeze-preserved blood components (platelets and plasma clotting factors): $1,325K; resuscitation/surgical procedures for treating combat shock and trauma, including radiation casualties: $1,065K; clinical procedures for management of radiation casualties (e.g. stem cell transplantation): $1,149K; wound covering: $100K; field medical information system: $120K; field/shipboard medical equipment (modular laboratory; laser device for joining severed vessels/nerves; resuscitation fluid monitoring devce): $310K; clinical procedures for treating acute oral diseases (blocking agents for deep dental decay lesions): $250K; chemical warfare-conventional casualty prediction model: $150K. Total funding for Project M0095: $4,779K.

Project M0096 Fleet Health Standards.—Computer-managed weight reduction program: $100K; criteria for physical fitness enhancement (i.e. physical conditioning methods and body fat standards for Navy and Marine Corps personnel): $224K; selection standards for Explosive Ordnance Disposal personnel: $90K; methods to assess vestibular function among naval aviators: $300K; exposure criteria for sinusoidal and mixed frequency vibration: $493K; design criteria for development of sonar headphones for enhanced signal detection: $125K; validation of personnel exposure limits to nitrate ester propellants: $50K. Total funding for Project M0096: $1,382K.

Project M0097 Air Crew Impact Injury Prevention.—Mathematical model for predicting head/neck injuries resulting from impact acceleration: $1,597K; assessment of head, neck, and pelvic effects of vertical impact: $700K; biodynamic effects of parachute-opening shock: $200K; long-term medical effects of exposure to impact acceleration: $200K. Total funding for Project M0097: $2,697K.

SPECIFIC PROJECT JUSTIFICATIONS

Disposition criteria for physical fitness enhancement.—This work analyzes on-the-job strength and endurance requirements for Navy and Marine Corps personnel and determines the functional components of fitness in performing operational tasks (e.g. stamine, dynamic strength, static strength, etc.) for each major anatomical area (e.g. upper torso, lower torso, arms, etc.). From this information techniques will be developed for assessing these fitness requirements in a standardized fashion, as well as developing remedial programs to train deficient personnel to these standards. The effort contributes directly to personnel readiness enhancement.

Computer-managed weight reduction program.—Approximately one-third of all male Navy personnel exceed the proposed standards of 20 percent body fat and require an effective weight reduction system to attain this standard. A computer-assisted weight reduction system is being developed that will instruct overweight personnel on the fundamentals of nutrition and exercise and on the levels of exercise and caloric intake required to lose a specified amount of fat and to increase lean body mass (i.e. muscle tissue). The system will test the individuals on knowledge factors regarding nutrition and exercise, provide them with various exercise/food intake options that can be used in losing weight, and monitor their progress through the weight-reduction program.

Design criteria for the development of sonar headphones.—Few sonar operators use currently issued headphones because they are uncomfortable to wear. Sonar operators, therefore, use their own sets which are commercially purchased or wear the standard set but use only one ear at a time in order to allow the opposite ear to recover from the discomfort. This practice alters the characteristics of the sounds received through the sonar phones and impairs the operator's ability to detect targets. This developmental effort will not only design a comfortable headphone set but one which selectively enhances those sounds that are critical to target detection and attenuates sounds that have been shown to be useless in target detection.

Chemical warfare-conventional casualty prediction model.—Medical planning for the support of Navy and Marine Corps operations is based primarily on casualty prediction models incorporating data on injuries resulting from conventional warfare. Such models are of limited usefulness, however, in estimating casualty profiles for conflicts in which chemical warfare agents are employed. Approved models are required which will enable Navy and Marine Corps medical planners to estimate accurately medical workloads, logistics, and oganizational requirements in order to provide optimum medical support should chemical weapons be employed by the adversary. This effort seeks to improve existing planning models by incorporating chemical effects data, testing the models against selected operational scenarios, and providing a basis for development of naval field doctrine for handling mass casualties.

MANPOWER SYSTEMS R. & D.

Senator COHEN. Three and a half million dollars are being requested for "Manpower Control Systems Development." Please provide justification for the following projects: "fleet support manpower;" "computer-based manpower planning and programming;" "recruiting system management;" "civilian personnel issues;" "second generation human resources management;" and "geographic stability."

Admiral WALTERS. The following is a brief description of the content of each of the above projects along with our plan for fiscal year 1983 R. & D. effort:

Fleet Support Manpower will develop and test techniques to forecast Navy support manpower requirements based on size and mix of fleet, to plan for long-range aggregate civilian and military requirements and to improve existing maintenance policies and assignment strategies. In fiscal year 1983, we plan to develop Navy-wide models for forecasting aggregate support requirements for shipyards and air rework facilities (NARF's) and develop initial methods for improving personnel utilization through alternative maintenance/assignment strategies.

Computer Based Manpower Planning and Programming.—Changing resource limitations make Navy officer, enlisted, and civilian occupation-level inventory management difficult. The objective of the project is to determine accession, promotion, and/or affirmative action plans that produce inventories that meet requirements. In fiscal year 1983, we will begin development of a comprehensive officer personnel management system and test and evaluate an all-Navy structured accession planning system (STRAP).

Recruiting System Management.—An improved method of allocating resources of recruiter and advertising budgets for officer program is needed since attainment of fiscal year 1980 goals was not realized for some major programs. Due to recent high attrition levels of mid-grade petty officers, understanding of and recruiting strategies for prior-service recruiting and lateral entry recruiting is needed. In fiscal year 1983, Navy will analyze method of allocating resources for officer recruiting and devise improved allocation method and develop data base on prior-service personnel to include demographics, attitudes, and future plans in order to plan recruiting strategies.

Civilian Personnel Issues.—The Civil Service Reform Act of 1978 (CSRA) requires the development and implementation of a new performance-based appraisal system to serve as the basis for personnel actions. This requirement can be partially met by a system based on clearly identified tasks for each job, measured work output, and the cooperative development of performance standards which permit accurate evaluation of job performance. The second portion of the CSRA requirement can be met by the development and implementation of training programs for appraisal program participants. In fiscal year 1983, we plan to continue the test and evaluation of alternative performance appraisal methods and begin design of supervisory task training.

Second Generation Human Resources Management.—First generation Human Resource Management (HRM) was driven by the Chief of Naval Operation requirements. Second generation HRM will evolve from meeting needs of unit commanders, who increasingly request highly technical management assistance from HRM Specialists. Navy needs to determine characteristics of second generation. HRM program. The Project will (1) establish procedure to forecast requirements for HRM assistance, (2) track and adjust HRM Support System to provide best possible service, (3) measure effectiveness of HRM assistance in relation to combat effectiveness, and (4) develop a management information system to alert senior Navy leaders to potential Navy-wide concerns. In fiscal year 1983, the Navy will conduct a needs assessment involving sponsors, managers, and system users addressing current and future requirements for human resource management services. This effort will include, but not be limited to implementable strategies for dealing with substance abuse, equal opportunity, and enhancing command level productivity. Emphasis will also be placed on civilian/military relationships and interrelations among programs designed to address organizational improvement and change. In addition, we will develop an overall 5-year program of system needs.

Geographic Stability will develop techniques to determine the Navy's capability to implement a formal geographic stabilization program for enlisted/officer personnel. In fiscal year 1983, the Navy plans to determine changes to current distribution practices/procedures necessary, Management Information System/Automatic Data Processing requirements, and costs to implement a formal geographic stabilization program.

MAN-MACHINE TECHNOLOGY

Senator COHEN. No funds were provided last year for "Man-Machine Technology". Justification is requested for the following programs: "skill reduction through system design"; "human factors engineering for ship design" "maintenance simplification"; and "assessing shipboard workload".

Admiral WALTERS. The Navy proposed the Man-Machine Technology Program Element because we recognize that many of our manpower and personnel problems (e.g., growth in skill level requirements) stem from the design of ships and systems. Over the past two years, reports from the General Accounting Office, the Defense Science Board, and the Naval Research Advisory Committee have supported this view. Justification requested for specific projects is as follows:

(1) Skill Reduction through System Design. This project will develop and test effective ways of reducing skill requirements through automation. Many previous attempts at automation failed because they used automation to perform tasks in which people are quite competent, or they shifted work from operators to maintenance personnel without a net reduction in manpower. This project will reduce the possibility of these costly mistakes.

(2) Human Factors Engineering for Ship Design. This project will develop and test a Human Factors Audit to identify operational problems that develop from the relations between men and their equipment. The Audit will let developers of surface warfare systems and ships identify human factors problems and develop solutions during system development. This will reduce the need for costly retrofits.

(3) Maintenance Simplification. This project will develop standards for designing new systems that will consider the physical characteristics and abilities of maintenance personnel The work will significantly reduce the cost of maintenance and increase readiness. Current estimates are that maintenance costs account for almost 40 percent of typical system life cycle costs.

Assessing Shipboard Workload. This project will develop and apply methods for measuring the workload of ship crews, teams and individuals. This work is needed to identify more precisely the minimum manning requirements for Navy ships. The products of the effort will prevent one part of the crew from having a much greater workload than another. The result will be balanced minimum manning.

TECHNICAL INFORMATION SYSTEM

Senator COHEN. Please provide a funding profile and additional details describing P.E. 63727N, Navy Technical Information Presentation System. What will be the final product? Why is this a cost type contract?

Admiral WALTERS. To design and test a Navy Technical Information Presentation System (NTIPS) which will combine an integrated set of effective procedures with advanced techology to achieve improved and standardized definition, acquisition, generation, mastering, replication, distribution, use, update, and control of Navy Technical Information (TI). NTIPS will apply to all TI used by the Navy for operating, maintenance, training, and logistic support of hardware systems. NTPS will be designed to redue time required for maintenance, maintenance errors, time required for training, and TI update cycle time. At the same time, NTIPS is intended to improve the processes of Techanical Information generation and control, and reduce life cycle costs of Technical Information.

Funding Profile is as follows:

[In thousands of dollars]

	Prior	Fiscal year— 1982	1983	1984
R.D.T. & E. totals	1,600	1,300	1,453	1,733
O. & M.N. totals				1,025
OPN totals				500

When completed and implemented about 1988, NTIPS will be a Navy-wide system for the generation, distribution and control of TI, for use in system operation, maintenance, training, and logistic support.

It is a cost-type contract because this is a research, development and test effort and complies with Defense Acquisition Regulations, Articles 3-405.6 and 4-101.

ANTIJAM COMMUNICATIONS

Senator **Cohen**. The Near-Term Anti-Jam Communications project will provide the capability for anti-jam voice and data communications in fiscal year 1987. Fiscal year 1987 is not hear-term. Why does it take so long to develop this capability?

Admiral **Walters**. The Near-Term Anti-Jam Communications project is being implemented in two phases. Phase I provides anti-jam voice only capability [deleted]. Based upon successful operational and technical testing (OPEVAL/TECHEVAL) of this capability [deleted]. Phase II will provide both anti-jam voice and data capability [deleted].

The fundamental reason for the delay in attaining the anti-jam voice and data capability is the increased platform intergation complexity required to interface tactical data systems with weapon systems. In addition, data systems require more sophisticated error correction coding and control techniques that tactical voice systems.

AIRBORNE MINE COUNTERMEASURES

Senator **Cohen**. Please provide a detailed break-out of the funds requested for advanced airborne mine countermeasures equipment.

Admiral **Walters**. The break-out of the $12.3M requested in fiscal year 1983 for airborne mine countermeasures equipment is shown below:

	Millions
Magnetic sweep AN/ALQ-166	$4.2
Controlled depth moored sweep A/N 37U	3.0
Magnetic environment measuring equipment AN/ASQ-182	2.1
Acoustic sweep AN/ALQ-160	1.2
Advanced acoustic sweep	1.8
Total	12.3

AIRBORNE MINE COUNTERMEASURES

Senator **Cohen**. What is the funding profile for the AN/ALQ-166? When will production begin and what is the IOC for this equipment?

Admiral **Walters**. The funding RDT&E profile for the Magnetic Sweep AN/ALQ-166.

Fiscal year 1981 and prior	$29.2
Fiscal year 1982	6.5
Fiscal year 1983	4.2
Fiscal year 1984	1.5

The production is scheduled to begin in fiscal year 1985 and IOC [deleted].

SHIPBOARD DATA MULTIPLEX SYSTEM

Senator **Cohen**. The Shipboard Data Multiplex System (SDMS) is a continuing project and $4.9 million has been requested for use in fiscal year 1983. What is the similarity between this program and the Submarine Advanced Combat System (SUBACS)? Is SDMS intended for use on board DDG-51 class ships?

When will this program result in a usable product for introduction on new design ships?

What would be the impact of cancelling this program, if it is not intended for use on board DDG-51 class ships?

Admiral **Walters**. The Shipboard Data Multiplex System will be installed aboard the test ship USS *Oldendorf* (DD-972) this calendar year for test. The Approval for Service Use (ASU) is expected in October 1984. It is a general purpose data multiplexing system. The techniques, procedures, and equipment have application to many specific systems being developed for shipboard use. One of these systems is the Submarine Advanced Combat System. It is the next generation integrated submarine combat system. It is in the early stages of concept development, will most likely utilize some form of data multiplexing, and is scheduled for ASU in the early 1990's.

SDMS has been incorporated in the DDG-51 Preliminary Design and is intended for this class of ships.

DATA TRANSMISSION

Senator **Cohen**. Please provide a list of all 6.3 and 6.4 program elements which have application to improving transmission of data involving ships which operate in a carrier battle group.

Admiral **Walters**. The following program elements have application to improving transmission of data involving ships which operate in a carrier battle group:

24163N-High Frequency Improvement Program.
25604N-Joint Tactical Information Distribution System.
35160N-Defense Meteorological Satellite Program, Navy.
63207N-Tactical Environmental Support System.
63382N-Battle Group Anti-Air Warfare.
63519N-Advanced Command Data Systems.
63763N-Integrated Tactical Surveillance System.
64218N-Environmental Equipment Support.
64779N-Joint Interoperability of Tactical Command and Control Systems.

ADVANCED COMMAND DATA SYSTEMS

Senator **Cohen**. Please provide justification for P.E. 63519N, Advanced Command Data Systems.

Admiral **Walters**. The Advanced Command Data Systems (ACDS) project is the only project which supports functional improvements to the heart of the ship's combat system, the Navy Tactical Data System (NTDS). ACDS work is designed to use the lessons learned over the last 20 years of NTDS fleet operations and the advances in technology and new system development to improve NTDS to meet the threat of the 1990's. On going efforts in ACDS include:

Multi-Source Track Management, which develops algorithms on how to handle all the information delivered to the ship to its best advantage.

Joint Tactical Integrated Data Systems (JTIDS)/NTDS interface, which ensures that the additional information and capabilities that JTIDS provides are used effectively.

UYK-43 computer interaction, which will allow the best software/system design for use with the UYK-43 capabilities.

Algorithm improvement, which develops modern techniques of processing, identifying and correlating Automatic Detection/Tracking radar tracks in the shipboard combat system. The major deliverables from ACDS are algorithms which will be turned into operational software to improve NTDS capability in the fleet.

SHIP COMFORM

Senator **Cohen**. Please provide a detailed break-out and a funding profile for ship Concept Formulation.

Please identify the projects which have the highest priority (less than 60 percent of the funding) in this program.

Admiral **Walters**. The breakdown of the funds requested for fiscal year 1983 is as follows:

Subproject:	*Requirement (millions)*
DDG-51 Preliminary design (complete)	$4.0
LPDX preliminary design (continue)	3.0
New concepts	.8
Analytic techniques	.8
Computer supported design	2.2

Surface ship conform	5.0
Extended planning annex ships	3.0
Total	18.8

The projects that have the highest priority are the ships that are undergoing Preliminary Design. These are driven by the Shipbuilding Plan, and failure to accomplish them would ultimately result in an unexecutable ship acquisition program. The Analytic Techniques and Computer Supported Design subprojects continue to develop the necessary tools and procedures used in the generation of ship designs. The New Concepts, Surface Ship Conform (Concept Formulation), and Extended Planning Annex (EPA) Ships subprojects are the continuing efforts to examine the ships that are beyond the Shipbuilding Plan either in the EPA or beyond, to develop new ship designs and concepts and to identify the necessary RDT&E prerequisites for the successful adoption of the design.

MARINE CORPS ADVANCED MANPOWER/TRAINING SYSTEM

Senator **Cohen**. There is $1.5 million dollars in the budget for an R. & D. program called "Marine Corps Advanced Manpower/Training System." Of this total, $1.1 million is for the development of "methodologies" intended "to improve manpower planning and control." It is not clear why new "metholologies" are required. Please provide justification for this program, and explain the final product.

Admiral **Walters**. The Marine Corps Advanced Manpower/Training System provides for the automation of manpower data systems used in recruiting, assignment training, and force planning. Improvements include updates to the Enlisted Force Management System model which will allow manpower planners to forecast future force structures. Computerized Adaptive Testing, a joint service program to improve pre-enlistment testing of recruits is also funded under this project. Another model to be developed will allow planners to identify manpower requirements early in the systems acquisition process. The final product of these projects will be number of improved manpower projection and force planning capabilities as well as a more accurate system for testing and assigning recruits to technical schools and Military Ocupational Specialties.

HUMAN FACTORS ENGINEERING DEVELOPMENT

Senator **Cohen**. The R. & D. program called "Human Factors Engineering Development" includes funds related to Seafire console design and simulation requirements. Please provide a break-out of the funds in the project which concern Seafire.

Admiral **Walters**. As a result of internal Navy budget changes, no funds will be spent on Seafire in fiscal year 1983.

NAVAL GUNS

Senator **Cohen**. Is it true that the 155mm rounds used by the Army could not be used on Naval Warships because the Navy's safety requirements are stricter?

Admiral **Walters**. The Navy Weapon System Explosive Safety Review Board determined in 1980 that use of the Army 155mm ammunition would be acceptable following individual projectile and fuze certification. A different propellant charge would be required since Army bags are not compatible with Navy handling systems and changes to most projectiles and fuzes are anticipated before Army 155mm rounds could be used on naval warships.

Senator **Cohen**. Is it true that the Navy has stricter safety requirements for gun ammunition because of the shipboard environment?

Admiral **Walters**. The Navy has stricter safety requirements because accidental detonation of one round could cause extensive damage to a ship if other rounds are also detonated.

Senator **Cohen**. If the Navy switched to 155mm guns instead of 5" guns, would new ammunition have to be developed?

Admiral **Walters**. No new ballistic ammunition development would be specifically required for the Navy. A different guided projectile would be required since Copperhead does not meet the range and maneuverability requirements for ship use. The Navy 155mm guided projectile would be a modified 5" SAL GP with upscaled warhead and rocket motor.

Senator **Cohen**. Would it be more expensive than the Army's ammunition, assuming equal quantities were procured?

Admiral **Walters**. The cost differential between Army and Navy 155mm ballistic ammunition would depend on the modifications required to make Army ammunition compatible with Navy safety and handling requirements. The initial estimates indicate that the 155mm guided projectile will cost no more than Copperhead projectiles, assuming equal quantities would be procured.

MK 86 IMPROVEMENT

Senator **Cohen**. Please provide a break-out of all funds concerning Seafire which are included in PE 64652N, Gun System Improvement Program.

Admiral **Walters**. As a result of internal Navy budget changes, no funds will be spent on Seafire in fiscal year 1983. Previously $8.353 million in fiscal year 1982 and prior were authorized for the integration of the Seafire Fire Control System.

INFLUENCE MINE COUNTERMEASURES

Senator **Cohen**. The Navy [deleted]. In PE 64576N, Influence Mine Countermeasures, there is a program which will evaluate the use of PHM class hydrofoils for near-term use [deleted]. What success has this program met thus far?

Admiral **Walters**. The Hydrofoil Pressure-Acoustic-Magnetic (HYPAM) Sweep program is based on a series of tests concluded in 1980 [deleted]. To achieve an effective combination sweep an acoustic device and magnetic sweep system must be employed. Ranging tests were conducted earlier this fiscal year to establish the required configuration of the magnetic and acoustic sweep kits which would comprise the HYPAM System.

Preliminary results of data taken indicates that it is feasible [deleted]. Data from these tests are currently being analyzed in preparation for a 4th quarter fiscal year 1984 Milestone II decision concerning further development of the Hydrofoil Pressure-Acoustic-Magnetic (HYPAM) System.

RADAR SURVEILLANCE EQUIPMENT/NEW THREAT UPGRADE

Senator **Cohen**. What is the relationship between PE 64508N, Radar Surveillance equipment, and PE 64372N, New Threat Upgrade? What would be the impact of reducing funds in either or both of these programs?

Admiral **Walters**. PE 64508, Radar Surveillance Equipment contains two projects. S0166 Search (SPS) Improvements and S0876 Radar Automation. The SPS Improvements Project provides RDT&E support for design and development of major modifications, Reliability, Maintainability, and Availability improvements, and field changes for all Navy SPS type radar equipments. Individual subprojects include improvements for the AN/SPS-52, 55, 67, 40, 10, small navigation radars, radar repeaters and radar switchboards. This line develops the SPS-49(V)5 for application to five different ship classes, including CG/NTU ships and the SPS-48 high availability transmitter (HASST) for the SPS-48C and 48E radars for six different ship classes, including CG/NTU ships.

For the above mentioned program, this PE provides [deleted] R&D support for [deleted] SPS radars which represent a $1.0B+ investment in radar inventory.

Any decrement in these funds would immediately impact ongoing programs which are producing necessary MODS to existing hardware.

The second project in PE 64508N is S0876, Radar Automation. This project provides RDT&E support for the AN/SYS-1 for the DDG-2/15 AAW Upgrade and the AN/SYS-2 for CG/NTU. The SYS system automates, integrates and correlates input data from two or more radars [deleted].

PE 64372N provides the RDT&E support for the CG/NTU Program. Specifically funded within this PE are the AN/SPS-48E Radar, which is being developed exclusively for the CG/NTU Program, and changes, modifications and improvements for the existing engagement systems. A reduction in these funds would directly impact the CG/NTU Program, causing delays in this program.

ROLLING AIRFRAME MISSILE

Senator **Cohen**. Assuming the 5" Rolling Airframe Missile successfully completes R.D.T. & E., what are the plans for procuring and installing it onboard U.S. Navy ships?

Admiral **Walters**. The decision to budget for procurement of the 5" Rolling Airframe Missile (RAM) will be made at Milestone IIB. This is expected to occur during the fourth quarter of fiscal year 1982 on completion of the present series of missile firings. The Navy plan for RAM installation is to integrate the RAM with NATO

Seasparrow Missile System. A 2-year program to develop the alterations necessary is planned for fiscal year 1983-84.

SM-2/SM-3 MISSILES

Senator **Cohen**. Please provide the current funding profile and projected IOC for the SM-3 and for the SM-2 (Block III) missiles. What is the total estimated cost for each? What is the difference between these two missiles? What is the mission for each of these missiles? SM-2 (Block III) was not discussed in the Program Element Description book, but it is understood to have been considered by Navy.

Admiral **Walters**. We continually assess surface-to-air missile requirements for Anti-Air Warfare area defense. AEGIS with the 13.5" diameter SM-2 Block II Missile is the heart of our area defense capability into the late-1980's. This Aegis developed missile is also being refit into our in-service cruisers. However, we expect the ASCM threat to keep advancing—smaller, higher, faster and more maneuverable—thus even SM-2 Block II will ultimately be outmatched. This mandates an immediate start on an upgraded firepower missile to IOC [deleted].

We are faced with a unique situation: On the one hand, we soon will have a new surface ship launching system—VLS—which could support a totally new missile [deleted] in diameter, nominally an "SM-3." The resultant large growth margin is highly attractive. On the other hand, decades of missile development experience tell us that such a new start will be very costly—at least 1 billion dollars—take ten to fifteen years from start-up to IOC, and entail considerable cost and schedule risk. Analysis of the required missile capability also indicates high risk in development of the new sub-systems that would be required.

In my opinion, the near-term IOC requirement mandates a low-risk approach, with new development and attendant increased risk only where necessary. We can overcome the time and cost risks by an evolutionary upgrade of the SM-2 Block II Missile, improving certain sub-systems so as to match-up with Aegis Combat System's ability to handle the advanced threat—after all, that's what P^3I is all about. We have called this SM-2 Block III. Such a program is estimated to cost some 250 million dollars in research and development, and would result in a missile unit cost of about 650 thousand dollars, versus at least twice that for a "new" missile. And, of course, the large costs of production start-up and establishing a logistics pipeline for a new missile must be balanced against the lower costs of modifying existing production lines and logistics for an evolutionary missile in the Fleet's Standard Missile family.

Money is budgeted in the Standard Missile Improvement Program Element, as shown below, to support further analysis and a fiscal year 1983 start on SM-2 Block III.

Fiscal year:	*In millions*
1983	$16.5
1984	27.6
1985	44.5
1986	39.3
1987	32.7
1988	33.9

While with immediate action we can maintain the continuum of AAW area defense capability well into the 1990's, we must also address the different challenge posed by the ASCM launch aircraft and their jamming and targeting escorts. These targets are by nature beyond the reach of area defense systems, and their attrition is vital in easing the saturation that can be imposed on area and point defense systems by the high numbers of ASCM's released from the mother planes which get by our fighter defenses. We need a long range missile that will not only provide this critical force multiplier by helping in this attrition, but also provide a better way to protect our battle forces not in company with carriers. The solution to the "outer air battle" is being aggressively pursued. This effort has had numerous names but is presently nameless. The term SM-3 is now defunct.

MISSILE SENSORS

Senator **Cohen**. What kinds of sensors have been considered for use in anti-ship missiles launched from surface ships or submarines? What kinds of sensors are intended for use in such missiles? What plan does the Navy have for dual-mode, home-on-jam, infra-red, or anti-radiation seekers?

Admiral **Walters**. Harpoon and Tomahawk constitute the Navy's only currently planned surface and submarine launched anit-ship cruise missiles, although we have a R. & D. program evaluating the potential of the Norwegian Penguin, an infrared terminal homing short range cruise missile for possible use on small patrol craft. [Deleted.]

In fiscal year 1983, in Program Element 28009N—Tomahawk Improvement Program, the Navy will begin an important program to give our Harpoon and Tomahawk anti-ship missiles increased survivability and target selection improvements. [Deleted.]

AEGIS

Senator **Cohen**. The Navy has requested 8.1 million dollars for further development of Aegis under PE 64303N. Estimated additional costs to completion are 94.4 million for fiscal year 1984 and beyond.

In a separate program, Navy is requesting 45.1 million dollars for "CG 47 and Aegis product improvement". One of the projects within this program is called "Spy-1 Radar Improvements" and it is estimated to cost 15 million dollars in fiscal year 1983 and 25.4 million dollars in fiscal year 1984 and out to complete this project.

Please explain these two programs. We are building the Aegis cruiser right now. What is the justification for these programs, and what happens if some of the requested funds are not provided?

Admiral **Walters**. Aegis Weapon System MK-7 was developed for the first five CG 47's under P.E. 64303N. That development is complete, the first system has been delivered to Ingalls, and production is stabilizing. Two points are germane:

(1) $8.1 million in fiscal year 1983 is (1) to develop a digital automatic test set for an Aegis depot and (2) to provide spare parts, equipment repairs, engineering modifications, and data analysis for the Aegis Engineering Model in USS *Norton Sound* (AVM 1). This is to support Standard Missile Two and Vertical Launch at-sea tests. Actual test costs are borne by those programs. If funds are not provided, the tight test schedules now planned for these two programs will not materialize.

(2) $94.4 million is the difference between the current Navy plan through fiscal year 1984 and the threshold for total development costs predicted in 1977. Since Aegis has already delivered to CG 47 it does not represent "Costs to completion."

One of the charges made to the Navy since the inception of Aegis has been to prevent obsolescence during the long one and one half decades of ship construction. Efforts to achieve that goal are budgeted in P.E. 64307 and are principally related to ships following CG 51:

(1) Project S1275 provides for product upgrading the Aegis radar to a Spy-1B version. Spy-1B promises to be lighter and more capable against the jamming threat expected in the 1990's. Failure to provide the fiscal year 1983 request will lengthen the development schedule and impede the deployment of Spy-1B not only in CG 47's but also in DDG 51's.

(2) Project S1447 provides funds in fiscal year 1983 to perform the combat system engineering connected with:

Landing Tomahawk Common Weapons Control System, the ASW Combat System, and Automatic Gridlock in NTDS.

Upgrading the Aegis Display System to Battle Group capability.

Enhancing the radio suite to Flag requirements.

CSEDS

Senator **Cohen**. Please explain for the record why the Navy has constructed the Combat System Engineering Development Site, and why additional funds have been requested to continue towards completion of this facility.

Admiral **Walters**. No funds have been requested to "complete" the Combat System Engineering Development Site in Moorestown, New Jersey. This Site is complete as a land-based prototype of the CG 47 Combat System. It is used to system engineer, develop and test the combat system; proof and validate computer programs; evaluate supply and logistics methods; and train sailors for CG 47 ships. Funds requested under P.E. 64304N, CSEDS, are to complete the Combat System Engineering Development for the first five CG 47's, not the facility.

AEGIS

Senator **Cohen**. The Aegis anti-war combat system, in combination with Standard Missiles SM-1 and SM-2, will become the heart of the Navy's future ship-board defense against enemy cruise missiles. It is also an expensive system to procure.

What demonstrations and/or design capability lead you to conclude that this system can perform successfully in a wartime environment characterized by multiple incoming cruise missiles and by electronic jamming?

Admiral **Walters**. Aegis has been successfully tested at sea in USS *Norton Sound* (AVM 1) since 1974 and at the Combat System Engineering Development Site, Moorestown, New Jersey since 1978. The hours of operation are now nearing 100,000. Multitudes of tests have been conducted against single and multiple targets of all sizes and speeds, at all altitudes, both maneuvering and non-maneuvering, and in clear and jammed environments. Aegis has performed successfully in all cases. Recently the system was landed in CG 47 and began operationally tracking almost immediately. Based on this extensive experience, the Navy is confident that the system will perform well in a wartime environment.

Senator **Cohen**. How much of the cost of the CG 47 is due to cost of this combat system?

Admiral **Walters**. About 50 percent.

INTEGRATED TACTICAL SURVEILLANCE SYSTEM

Senator **Cohen**. Please provide additional information concerning the Integrated Tactical Surveillance System (ITSS). A detailed description of the intended use of the requested funding is desired. When will equipment begin to be built? For how long will this remain simply a concept?

Admiral **Walters**. The requested funding, $17.8 million RDT&E for fiscal year 1983, is intended to initiate work to arrive at detailed specifications for approved component elements of ITSS, and to begin development of ITSS sub-systems with priority being given to those which will provide for near-term enhancement of existing surveillance capabilities. Following is a line-item breakout of the fiscal year 1983 request:

ITSS by 1983 minimum funding requirements

	In millions
Concept refinement and system definition (preparation of specifications for approved component subsystem)	$4.0
System engineering and integration (design and control of interfaces and sizing of C^3 elements to match sensor elements)	2.5
Initiate connectivity [deleted]	1.0
Design and development of a prototype afloat correlation system	1.2
Design and Development of a Shore-based Correlation and Fusion Center (to upgrade the capability of OSIS nodes to handle additional sensor inputs)	4.6
Development and testing of a prototype over-the-horizon radar system	1.5
Engineering of national sensor upgrades	1.0
Technical and management support	2.0
Total	$17.8

Command and control system upgrades that will allow processing and dissemination of surveillance data from existing and programed sensors will be among the first items acquired. If sufficient funding is available for the development of specifications and request-for-proposal in fiscal year 1983, it is probable that equipment (hardware and/or software) construction will commence in early fiscal year 1984.

The staffs of the Chief of Naval Operations and the Secretary of the Navy are presently reviewing ITSS concept exploration results and recommendations. The Navy approval/decision process is scheduled for completion in May 1982 with comprehensive briefings for the Office of the Secretary of Defense to be given in June. ITSS composition and architecture will be made available to the Congress following OSD review, at which time ITSS will have progressed beyond the conceptual phase.

ADVANCED NAVY ENERGY PROGRAM

Senator **Cohen**. Is the Advanced Navy Energy program based on level-of-effort funding, and if so, how could this year's planned increase in this program be postponed? What would be the impact? Please focus your answer on possible reduction in the Mobility Fuels/Advanced" project.

Admiral **Walters**. The Advanced Navy Energy R. & D. Program is not based on level-of-effort funding but is determined by the funds required to meet specific current and anticipated needs of the fleet as addressed by various energy conservation and mobility fuels projects.

The Mobility Fuels R&D Program has transitioned from a principally synthetic fuels investigation and test program to a more comprehensive investigation of the changing petroleum crude feedstock problem. In the last five years the Navy has seen a degradation in the quality of fuels procured to military specification. Current military fuels specifications evolved to match engine requirements to fuels procured from a stable marketplace in which crude sources and processing remained unchanged for decades. In recent years crude sources and processes have begun to change rapidly resulting in the specifications becoming inadequate to ensure fuel quality in many instances. Documented recent problems include:

JP-5—Increasingly high aromatic levels have resulted in smoke point problems, thereby producing visible smoke trails in fleet F-14 aircraft. This condition is unacceptable for combat conditions and must be solved as soon as possible.

JP-5—Problems with low lubricity fuel resulted in catastrophic failures of the afterburner hydraulic fuel pump in the F-14A and excessive friction in the fuel controls of the A-7 B/C aircraft.

JP-5—Peroxide formation in the fuel has caused incompatibility problems with neoprene diaphragms in the fuel pump of the TF-41 engine and resulted in the loss of one aircraft (A-7E).

Diesel Fuel Marine (DFM)—Fuels purchased to military specifications from domestic supplies have demonstrated severely short storage life (3 months) and caused excessive failure rate of filters and coalescers in gas-turbine powered ships. This fuel was subsequently declared unusable in this class of ship. This was an expensive lesson which would easily be repeated many times if the basic causes of the problem are not better understood and corrected.

The Navy's Mobility Fuels R&D Program includes work designed to evaluate the effects of changing fuel properties on hardware behavior so that specifications can be modified to avoid future problems. The impact of reducing the requested fiscal year 1983 funding levels will be to tolerate continued fuel procurement problems, increased engine maintenance costs, and a reduction in weapon system reliability, performance and readiness for an extended period. The dollar costs of not resolving these problems cannot be quantified but they far exceed the cost of the RDT&E program. The Navy Energy R. & D. Program is designed to reduce substantially future procurement and maintenance costs as well as improve performance in areas such as range and top speed. The savings that accrue from the program pay for it many times over.

OVER-THE-HORIZON TARGETING

Senator COHEN. The Navy is requesting $24.1 million for development of Advanced Command and Control Systems. This money is being used to develop and establish command centers and shipboard facilities for Over-The-Horizon Targeting.

Please explain how targeting information is provided to a Tomahawk equipped ship so that it can launch one of these long-range cruise misiles in an anti-ship mode.

Admiral WALTERS. Targeting information will be provided by a variety of sources. Organic sensors of Battle Group ships and aircraft, including maritime patrol aircraft in support of the Battle Group, [deleted]. Non-organic information derived from sources outside the Battle Group is collected and correlated [deleted] and transmitted [deleted] to the Tomahawk equipped ship. The Tomahawk ship then develops a targeting solution based on these sources of information.

SHIP DESIGN FUNDING

Senator COHEN. Please provide a detailed break-out of funding for ship design contained in the Shipbuilding and Conversion, Navy account; in New Ship Design; and in Ship Concept Formulation.

Admiral WALTERS. The breakdown of funds requested for the fiscal year 1983 Ship Design in the Shipbuilding and Conversion, Navy, account are listed below. All funding is for ship Contract Designs.

Ship type:	*Requirement (millions)*
AD	$0.3
AE	1.4
T-AGM(C)	2.2
AGOS	.4
T-AGS(C)	.5
T-AHX(C)	1.4

T-AO	1.8
AOE	6.7
T-ARC	.1
ARS	.1
BB	6.0
CG-47	3.1
CRAFT	1.7
CV(SLEP)	7.5
CVN	1.0
DD-963	2.6
DDG-51	12.4
LCAC	.8
LHD-1	15.5
LSD-41	.5
MCM	1.1
MSH	4.1
SSN	2.0
Trident	24.0
Total	97.2

The breakdown of the funds requested for Ship Conform for fiscal year 1983 are as follows:

Subproject:	*Requirement (millions)*
DDG-51 preliminary design (complete)	$4.0
LPDX preliminary design (continue)	3.0
New concepts	0.8
Analytic techniques	0.8
Computer supported design	2.2
Surface ship conform	5.0
Extended planning annex ships	3.0
Total	18.8

The New Ship Design program element has only one project, the Shipboard Data Multiplex System.

QUESTIONS SUBMITTED BY SENATOR GARY HART

ARAPAHO

Senator HART. Last year, the report of this committee referred specifically to at-sea tactical testing of Arapaho. Such testing is planned for Phase II of the program. Does the Navy intend to go forward with Phase II, and if not why has it disregarded the committee's interest in tactical testing?

Admiral WALTERS. The question of possible at-sea tactical testing of Arapaho—termed Phase II—has been discussed with the Committee for the past two years.

In 1980 Dr. Perry stated that such testing would require the commitment of extensive resources, not solely funding but * * * "substantial logistic support, commitment of ships and port facilities, support services and personnel" * * * He also stated that Phase II tests would "have to compete for funding with other programs in the fiscal year 1981 to fiscal year 1983 timeframe."

In 1981 the CNO was asked how much funding would be required in fiscal year 1982 for Phase II testing. Admiral Hayward replied that Phase II would cost approximately $12 million, of which $8 million would be needed in fiscal year 1982.

The fiscal year 1982 appropriations bill actually contained only $3 million "to continue the examination of containerized helicopter ASW support for mechant ships." These funds are being used specifically for this purpose. They should also allow completion of Phase I at-sea feasibility testing, presently scheduled for fall, 1982. (The costs of this effort have increased since last year.)

In summary, the Navy has not in any sense disregarded the Committee's interest in tactical testing. We are moving forward with Arapaho in an orderly manner with the funding provided. It is essential that feasibility testing at sea (Phase I) be completed to provide data with which to address the question of tactical testing—a complex issue involving significantly increased cost in dollars, fleet services (ships, submarines, helicopters, personnel, etc.), and other resources.

Senator **Hart**. Last year, the Chief of Naval Operations said that an addition $12 million would be sufficient to complete both Phase I and Phase II. Is this est mate still valid?

Admiral **Walters**. No; costs are estimated to be greater. Current estimates funding required for Phase II vary, depending upon the scope and validity of th testing. The minimum estimate is about $16 million. Other estimates are muc greater. Beyond the dollar cost, however, Phase II testing would require dedicatin a significant segment of the Atlantic Fleet to this effort for an extended period time. Ships, submarines, helicopters, and personnel would be required for man months—for training, work-ups, rehearsals, and test periods extending more than year. Of course, the Arapaho containership would have to be chartered for th entire period. The cost will vary widely, depending upon how thoroughly we addres the major questions of Arapaho's tactical utility and worth.

Senator **Hart**. How much additional funding is required in fiscal year 1983 t move forward with Phase II?

Admiral **Walters**. It is difficult to estimate this with accuracy, because we stil have not taken the Arapaho system to sea for initial feasibility tests. Plans fo Phase II would be significantly affected by the performance of the system in Phase I. Based on our present estimates, Phase II would have to be structured to furnish the facility in fiscal year 1983 and fiscal year 1984, then conduct at-sea tests in fiscal year 1985 and fiscal year 1986. The funding required in fiscal year 1983 would be approximately $6 million dollars. I would like to emphasize, however, that the cost and scope of Phase II are so great that it should not be undertaken without a full addressal of it's cost-effectiveness. The Navy is committed to making Phase II recommendations to the Committee in this respect, along with our report of the feasibility demonstration, Phase I. I would urge that the issue not be pre-judged in the absence of these detailed test results.

Senator **Hart**. If the at-sea tactical testing of Arapaho were undertaken as part of a general fleet exercise, could not testing costing be controlled sufficiently to stay within the $12 million figure provided by the CNO?

Admiral **Walters**. Such an approach (non-dedicated testing) would provide little useful data. The Navy has a great deal of experience in this specific area, and it has shown us clearly that the worth of new operational concepts and capabilities such as Aparapho is difficult to evaluate and requires extensive, dedicated testing. A recent example is the Sea Control Ship (SCS) evaluation. In 1973 the SCS, her air wing of helos and VSTOLs, along with major fleet and supporting elements, participated in three major fleet exercises in 1973, covering many months. In spite of the mass of data collected by a large, dedicated, independent test team, no useful assessment of the SCS ship-helo ASW concept could be developed from these extensive at-sea operations. To arrive at a good evaluation, the Navy was then required to commit vastly greater resources in dedicated testing through much of 1974.

Senator **Hart**. If testing were terminated with Phase I, how much additional time would be required in a national emergency to put Arapaho into service? Would procurement of modules and designation of Naval Reserve Arapaho units be advisable without completion of Phase II?

Admiral **Walters**. With the design complete and the engineering drawings available, Arapaho modules could be fabricated in a relatively short time. The tests we are completing will identify any problem areas involved in on-loading or off-loading with standard port cranes and facilities. The procurement of modules for storage is a complex issue involving analysis of optimum use of scarce funds. One aspect of the analysis would have to address whether the funds could better be used for Naval systems which are effective over a wider range of likely scenarios than an extended, major, worldwide, conventional submarine/ASW war with the Soviet Union—including an addressal of whether such a conflict might more effectively be deterred by alternate use of funds. Another aspect of the analysis would have to address whether—if Arapaho preparations were to be pursued—the funds could better be used for maintaining higher force levels of personnel, helos, sensors, weapons, etc. The wisdom of designating Reserve units to Arapaho modules will have to be studied with the goal of maximizing the utility of planned helicopter assets.

SSES (SEAMOD)

Senator **Hart**. Will the DDG-51 be a variable payload ship, with the complete set of SSES zones, module stations and modules?

Admiral **Walters**. The DDG-51 will be a variable payload ship to a degree. The Ship Systems Engineering Standards (SSES) and DDG-51 are being designed concurrently; as the SSES standards are developed, the extent of their application in DDG–51 Class of ships will be determined.

Senator Hart. Does the DDG–51 class have the ability to be outfitted (in the future) with a helicopter hangar as well as a "B" module, "A" module, and "AA" module?

Admiral Walters. The DDG–51 has one "B" size weapon module aft, and two "A" size weapon modules, one forward and one aft. There are in development SSES standards for the "A" module, that when completed will permit an "A" module in conjunction with a helicopter hangar located over it to serve as a helicopter facility. The DDG–51 does not require an "AA" module.

Senator Hart. Will the DDG–51 be capable of conversion to a primary ASW role through exchange of modules?

Admiral Walters. There is no need to convert DDG–51 to a primary ASW role. The DDG–51 baseline combat system configuration includes SQR–19 (TACTAS), SQS–53C Sonar, ASW Stand-off Weapon, two MK–32 Torpedo Tubes, LAMPS MK-III/ASWACS processing, self-noise as low as the DD 963 Class, and the latest weapons and management control systems which already give it a superior ASW capability.

Senator Hart. Which planned Navy combatant will be the first to have a full SSES capability so as to be a true variable payload ship? If it is not the DDG–51, when will the ship be procured?

Admiral Walters. The DDG–51 Class will incorporate all feasible aspects of SSES standards as they are developed. SSES is also developing standards for smaller and larger ships. We have not determined whether a total combatant can in fact ever be a true variable payload ship. Our primary concern is in weapons and combat systems, the combatant payload. This is where we are focusing our emphasis.

Senator Hart. If the DDG–51 were delayed or canceled, and direction were given to proceed with a ship incorporating full variable payload characteristics, when could that ship be ready for procurement?

Admiral Walters. SSES is a program to develop standards that lead to increased modularity. The degree of modularity that will be incorporated in any ship, combatant or non-combatant, will depend upon its useful application. With regard to the DDG–51 we are concentrating on the combatant payload, the DDG–51 weapons system. I do not anticipate the DDG–51 to ever be a complete variable payload ship that would incorporate all combat systems, propulsion and hull, mechanical and electrical (HM&E) equipments.

Senator Hart. How much additional funding is required in the fiscal year 1983 line for SSES if the DDG–51 is to be a variable payload ship?

Admiral Walters. If all the standards we consider applicable to this combatant that are scheduled for development are to be incorporated into the lead ship, an additional $10 million would be required to proceed to a more detailed level of design. The standards currently being developed support incorporation into a Preliminary Design, but would have to be continued through a higher level of detail design (normally done by the shipbuilder) because of the necessity to develop a precise configuration definition at the interface of module to module stations in the ship.

Senator Cohen. Thank you very much, gentlemen.

Admiral Walters. Thank you.

[Whereupon, at 3:30 p.m., the subcommittee adjourned, subject to the call of the Chair.]

Blank Page

3830

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

TUESDAY, MARCH 16, 1982

U.S. SENATE,
SUBCOMMITTEE ON SEA POWER AND FORCE PROJECTION,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

OCEAN VENTURE '81

The subcommittee met at 2:37 p.m., in executive session, in room 212, Russell Senate Office Building, Senator William S. Cohen, chairman, presiding.

Present: Senators Cohen, Byrd of Virginia, and Nunn.

Staff present: Francis J. Sullivan, minority staff director; Paul C. Bessozi, minority counsel; L. Wayne Arny III and Patrick L. Renehan, professional staff members; Mark B. Robinson, research assistant; and Kathleen L. McGuire, staff assistant.

Also present: Jim Dykstra, assistant to Senator Cohen; Paul Schreiber, assistant to Senator Denton; Gray Armistead, assistant to Senator Byrd; and Bill Lind, assistant to Senator Hart.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator COHEN. The Sea Power and Force Projection Subcommittee will come to order.

This afternoon it is my pleasure to welcome Adm. Harry Train, the Commander in Chief of the U.S. Atlantic Command and the U.S. Atlantic Fleet.

In August and September of last year, Admiral Train supervised a fleet exercise called Ocean Venture '81. The exercise included sea, air, and ground forces from some 15 nations and took place over parts of the entire Atlantic, the Caribbean, the Baltic, and the Mediterranean. It apparently was the largest exercise we have held in some time; and today he is here to describe it and explain the lessons we learned.

This is extememly important for us in this subcommittee for we are about to make make decisions on a defense budget that will affect our Armed Forces for years to come and we need to have some idea of how things are operating in the real world, or as close to the real world as possible, to help us with those decisions.

In addition, the military strategy that we, as a Nation, are pursuing depends in large measure on the weapons we buy, on the tactics we use and on the confidence our unit commanders have in their ability to succeed in combat using those weapons and tactics.

We can prepare all the manuals we want but short of actual combat it is only through free-play exercises of this type that we can validate our ideas and decisions and then change what does not work.

I applaud Admiral Train's and the Navy's efforts to conduct these free-play-style exercises and to provide training for the fleet that is as realistic as possible. I urge him and the Navy to continue their efforts toward realism and toward increased, meaningful training opportunities.

Senator Nunn.

Senator Nunn. I have no statement, Mr. Chairman.

Senator Cohen. Admiral, you may proceed.

STATEMENT OF ADM. HARRY D. TRAIN II, U.S. NAVY, COMMANDER IN CHIEF, U.S. ATLANTIC FLEET

Admiral Train. Thank you, Mr. Chairman.

This exercise which, as you indicated, was the largest peacetime naval exercise since World War II, perhaps in history, and was conceived 2 years ago [deleted].

We started to examine ways and means we might do something similar to convey a sense of solidarity among our NATO allies and also to indicate to our adversaries that we could work with the navies of the world with whom we did not have a formal alliance.

Now, I was aware that most of our allies in NATO and most of our friends and Rio Treaty allies in the Western Hemisphere conduct their exercises every summer, somewhere between June and August. I also was aware that NATO conducted a large-scale naval exercise normally toward the end of August or September of every year. So, I figured if I could get all of these countries who might find it advantageous to participate to put their forces together during the period of time when they already planned to use them, and if I worked far enough ahead, that we might be able to make up among our allies and friends an exercise similar in scale to OKEAN '75.

At that time I had become personal friends with most of the military leaders of the Western Hemisphere and NATO. I approached them as to their willingness to conduct such an exercise and found that they viewed it rather enthusiastically. I set about therefore planning the exercise. We decided the best time for all the nations involved was the period between August 1 and October 15. We also had scheduled a naval exercise in that period called Ocean Safari. I thought if I took the work "Ocean" as the stem and added a different suffix to it, I could float right into a new exercise and out of it.

So, we named the overall exercise "Ocean Venture '81."

OCEAN VENTURE '81

Aim: "To Provide an Atlantic-Wide Demonstration of Command and Control of National and Multinational Naval Forces in a war-at-sea Scenario."

Admiral Train. As the planning proceeded—and it was proceeding very well—[deleted].

Senator Cohen. Where did most of the criticism come from?

Admiral TRAIN. [Deleted].

Of course, the problem went away because [deleted] it was a U.S. Navy exercise [deleted].

CINCLANT built the framework; 30 international staffs fleshed out the plan, and 39 individual staffs worked on it.

Senator COHEN. Was Latin America involved?

Admiral TRAIN. Yes.

Senator COHEN. [Deleted.] It was a U.S. exercise?

Admiral TRAIN. I think I can show that by putting up the charts.

PARTICIPANTS

U.S. Army.[1]
U.S. Navy.[1]
U.S. Marine Corps.[1]
U.S. Air Force.
U.S. Coast Guard.[1]

[1] Deleted.

Units

Ship:	
CV	(1)
DD/FF	(1)
Submarines	(1)
Amphibious	(1)
Mine Sweeps	(1)
Support	(1)
PC	(1)
Total	234
Aircraft:	
Fighter/attack	(1)
MPA	(1)
MAC	(1)
SAC	(1)
Misc	(1)
Total	14,340

[1] Deleted.

Total personnel in excess of: 125,000.

Admiral TRAIN. I hope you can see that, Mr. Chairman. This shows that there were 14 nations plus the United States participating. Eight of those nations were NATO; six were not NATO. There were 234 ships, 14,000 flying hours involved, and 125,000 personnel plus the considerable reaction on the part of the Soviets who really became players in the exercise by virtue of their reaction.

[Chart deleted.]

Admiral TRAIN. This was the overall plan of the exercise, there were eight phases tied together by a single intelligence scenario. I will not brief from this chart because it is too complex. I will pick up each individual area one at a time.

It shows that we started down in the South Atlantic with the South American nations, moved up into the Caribbean where it became a joint exercise, Army, Navy, Air Force, and Marines, then on up the east coast of the United States, then into the North Atlantic all the way up to North Cape, then back down the coast to Western Africa, and into the Baltic and into the Mediterrean.

[Chart deleted.]

PIGGYBACKED EXERCISE

Admiral TRAIN. Phase I was an exercise, or a portion of the exercise that we piggybacked on our annual exercise, UNITAS. It involved [deleted] South American Nations, 57 ships, two of which were aircraft carriers. Three countries involved conducted amphibious landings. They were [deleted], using marines of those countries plus U.S. [deleted] marines. The remainder of the exercise was a SLOC protection exercise, or sealines of communication protection exercise, in which we employed the arrangement that we have within the Rio Treaty under the Inter-American Defense Board to command and control our shipping and our protection of that shipping along the coast of South America.

One portion involved sealines of communications between the Caribbean and the North Atlantic Narrows. The other portion involved the sealines of communication from the Buenos Aires area up to the North Atlantic Narrows.

[Deleted.] They steamed way out to sea and came back in and operated against the blue forces of the exercise.

Up in the North Atlantic Narrows area, [deleted] participated in a shipping protection role. It was a good exercise from everybody's perspective that participated and I have every reason to believe it left the participants believing they had participated in the largest exercise ever and had done very well in the process.

[Chart deleted.]

Admiral TRAIN. We then went up into phase II which was played in the Caribbean.

SOLID SHIELD

In phase II we went into an exercise that we normally called Solid Shield, in which the Army, Navy, and Air Force operated together. In addition we used [deleted] The Standing Naval Forces, Atlantic.

We began with a reinforcement of Guantanamo exercise, conducted a noncombatant evacuation of Guantanamo, then went over to the Vieques area where we conducted an amphibious landing. We were supported in that amphibious landing by Air Force B-52's which conducted a low-altitude attack on Vieques. We were supported by Air Force F-15's, A-10's, and F-106's, Puerto Rican National Guard A-7's and we also used two Reserve A-7 squadrons operating off the training carrier *Lexington*. They participated for 10 days and did extremely well in the exercise.

[Deleted.] Hurricane Dennis interrupted the exercise midway and we had to backload 4,000 Army and Air Force people, move them out of the area, and then move them back in after the hurricane passed, which was a significant accomplishment in itself.

The exercise was completed and, once again, all participants indicated it had been a very valuable experience.

SHORT NOTICE WEAPON EXERCISES

Phase III was a small exercise involving short-notice weapon exercises and training exercises off the east coast of the United

States. There is nothing really to describe there. It was rather a fallback and regroup portion of the exercise.

[Chart deleted.]

Admiral TRAIN. In phase IV we got into the major portion of the exercise. I brought with me the commander of the United States Second Fleet, Admiral Lyons, to go into some detail on phases IV, V, and VI for you, and to share with you the perceptions that he gained from the standpoint of the actual operational commander at sea with the forces.

At this point, with your permission, I will turn it over to Admiral Lyons.

STATEMENT OF VICE ADM. JAMES A. LYONS, U.S. NAVY, COMMANDER, U.S. 2d FLEET

Admiral LYONS. Thank you very much, Mr. Chairman. I hope you can put up with my voice this afternoon. I normally don't come equipped with the flu bug, but I am here with both of us.

We got underway on August 28, 40-some ships from various ports on the east coast. There are a few points I would like to make right here on that.

[Chart deleted.]

Admiral LYONS. None of these ships had ever really operated together before this exercise. [Deleted.] We had a delay due to Hurricane Dennis, and you are going to hear more about that later on. In fact, we had five storms throughout the exercise. I am happy to say we didn't suffer any storm damage. We did not have a surface combatant ship drop out of the exercise or suffer a major casualty throughout the 30 days we were underway.

Now, there are a few other things I would like to point out:

We established some new initiatives during this phase. One of the first ones and one which, I think, will have a tremendous payoff for us later on, [deleted]. We also had some breakthroughs in our communications [deleted]. We had some fantastic results [deleted]. I think that is just a quantum jump in our ability.

We instituted a new [deleted] concept for the movement of the task force.

[Deleted.] You will see how this comes into play a little later on.

We took *Caron*, which is a [deleted] *Spruance*-class destroyer [deleted]. We did it for two reasons, [deleted]. This worked out quite well.

As you have heard many times, we have a shortage of trained petty officers. We formed our own mobile training teams, [deleted]. We rotated them throughout the force. They provided three functions: They trained, they groomed, and they assisted in repairs. We found this to work out very well.

I think with that, what I would like to do is walk you through the exercise. When we came out of Norfolk, the first thing we did was to have an exercise with [deleted] two U.S. Coast Guard units, the cutters *Gallantin* and *Dallas*, which we incorporated in the exercise.

We moved on from that phase which actually was a good warmup for the [deleted] phase which is coming up next.

CV WAR AT SEA

Blue tactics [deleted].
Purple tactics [deleted].

The objective of the blue force commander [deleted], is depicted on this Vu-Graph here. First we had a goal of locating [deleted]. It takes a very imaginative tasking plan to carry out this type of search. Once having located them, he then was going to attempt a strike [deleted].

Now, the blue force commander utilized [deleted]. The purple force commander took an entirely different approach.

I did not object to either of these modes of operation because they both served a very useful purpose. [Deleted].

CV WAR AT SEA

Blue results.
[Deleted].
Purple results.
[Deleted].

Now, these are the results from this war at sea: [Deleted]. That is more than double what has been done in the past.

Again, I have to emphasize the imaginative [deleted] plan which took a lot of planning and a lot of effort.

I think I should mention right here [deleted] had not been fully worked up; they had only been through phase 2 of type training, so she still had to go through phase 3 and full ORE.

So, I think the air wing did very well up to this point.

Senator COHEN. Admiral, how do you account for the doubling of that capability?

Admiral LYONS. It is a mental approach, examining what your capabilities are, planning what you want to do and going out and showing that it can be done. A lot of people feel that they will drop off the end of the world [deleted]. That is not so. We put together what we felt was a realistic plan. It required instilling confidence within the air wing that they could execute that plan.

Purple's results were somewhat surprising. [deleted].

Now, I should mention right here that the weather throughout this period of time has been terrible; we have been operating with anywhere from 15- to 30-foot seas with solid overcast. It was a complicating factor [deleted].

I think the real answer is that you have to utilize both; you have to utilize the air wing and now that we are moving into cruise missiles into surface combatant forces, they now can be looked at in an offensive mode [deleted], and if you use them intelligently they can make a very significant contribution. [Deleted.] This tactic was extreme but it proved a point.

Senator COHEN. Your testimony said [deleted].

On the chart it says [deleted].

Admiral LYONS. This chart was made up before we completed the analysis. With refined analysis, we actually ran it on a computer run and put in all of the fire-control solutions that they fired from [deleted].

So, it can be done; you can button up. It takes an awful lot of effort [deleted] but it can be done, as attested to by this case.

[Chart deleted.]

[Deleted.]

The Harriers were on a deck cycle [deleted]. Because of the role they were in, they were a very nice complement to the F-14. In fact, I believe they set an all-time record in this exercise [deleted] and I would have to make a judgment call and say that is on the outer edge of their margin of safety.

Senator COHEN. Admiral, would there have been a change [deleted]?

Admiral LYONS. We still would have intercepted them at the same point. We could have intercepted—and I will tell you this, gentlemen—we could have intercepted them [deleted].

Admiral TRAIN. [Deleted.]

Admiral LYONS. [Deleted]. This is where we will bring in AWACS a little bit later on.

Now, we had successfully kept the [deleted] battlegroup undetected during this time. There were a number of elements involved. I mentioned earlier we had an integrated support area where we used very deceptive formations [deleted]. So, you can use all kinds of factors to your advantage.

[Chart deleted.]

[Deleted.]

As you know, give them something they are looking for and they are going to go to it, [deleted].

[Chart deleted.]

This slide gets a little busy. I will try to keep it simple. The main thing I want to point out on this slide is the Soviet Charlie submarine, which initially took a position right north of the Azores. [Deleted.]

Admiral TRAIN. [Deleted] this is one of the most critical portions of the exercise.

Admiral Lyons will talk about the tactics in a moment, but I want to talk about the [deleted] experiment. We included it in the exercise because I, as a fleet commander had to confess that I really didn't know whether the [deleted] threat was a threat that we could cope with or whether we had magnified it out of proportion.

For example, I really didn't know with any degree of certainty whether our difficulty [deleted] is due to the fact that we have lost our previous expertise, or whether it is due to the fact that we don't have the correct equipment to cope with them.

I wanted to get a better handle on that subject than we had. And, to get some data points so that when congressional committees asked me [deleted] I could be more knowledgeable than I have been in the past. [Deleted.]

[Chart deleted.]

It turned out that we didn't achieve the exercise objectives because we did two things that I had not intended. [Deleted.]

The second problem [deleted].

In addition, we had some very heavy seas [deleted].

[Chart deleted.]

Senator COHEN. What is your conclusion?

Admiral TRAIN. The conclusion is that this exercise neither confirmed [deleted], nor did it confirm the fact [deleted].

I believe we will be able to conduct the exercise on a limited scale, [deleted].

My conclusion was that it was a no test; we showed nothing. [Deleted.]

Senator COHEN. [Deleted], does that make them an effective system?

Admiral TRAIN. [Deleted.] In our case, for the strategic situations we see today, we need the mobility and the capability that we get out of our 688-class submarines.

Senator COHEN. As we move to the concept called division of labor or allied burden-sharing, would it not make more sense to give them more responsibility in defending those sea lanes [deleted]?

Admiral TRAIN. Indeed we try to do that, [deleted].

Senator COHEN. [Deleted.]

Admiral TRAIN. You are talking of more than submarines?

Senator COHEN. Yes.

Admiral TRAIN. [Deleted.]

Senator COHEN. [Deleted.]

Admiral TRAIN. That is correct. [Deleted.]

Senator COHEN. Would you agree as a naval officer with the assessment [deleted]?

Admiral TRAIN. No, sir, I do not. [Deleted.]

[Deleted.]

If you cannot escort your forces, as we have learned in two wars, you will lose ships and lose them in large numbers.

I will turn you back to Admiral Lyons to continue his discussion of phases IV, V, and VI.

Admiral LYONS. There are several elements I would like to bring out here. As we completed our transit [deleted].

One other thing here: [Deleted].

You can kind of get the flavor here. We had enough Orange air but we also had sufficient Red air to add another dimension to the exercise here.

[Chart deleted.]

We moved into the Magic Sword exercise, which was conducted from September 2 to 4. This slide depicts the number of tasks and strikes, sorties flown, in support of Magic Sword North. Nothing too spectacular here, [deleted.]

The other thing I would like to point out before we move on from this slide is that [deleted] *Eisenhower,* because of the modern wing and the ship itself and the control equipment, never missed a day of flight operations.

Senator COHEN. What kind of intercept mission does the Harrier perform, Admiral?

Admiral LYONS. [Deleted.]

Senator COHEN. Would it be capable [deleted]?

Admiral LYONS. [Deleted.]

Again, I will go back, if I may, to when we were talking about [deleted]. We have done this. We followed up this exercise with an exercise [deleted.]

[Deleted] If you want to look at it that way, it acts as a force multiplier.

Senator COHEN. Are there any problems [deleted]?

Admiral **Lyons**. [Deleted.]

Admiral **Train**. [Deleted.]

[Chart deleted.]

Admiral **Lyons**. This slide just kind of recapitulates a little bit of the [deleted] activity. Let us move on to the next slide.

[Chart deleted.]

[Deleted.]

Now, the thing that needs to be pointed out [deleted].

There are certain things that would facilitate that that we don't have, or which we need more of, but it is within our grasp.

[Chart deleted.]

This is a classic textbook operation. [Deleted.]

If you tried to write it in a story, you could not have done it any better.

[Chart deleted.]

Admiral **Train**. [Deleted.]

We also benefited [deleted].

[Chart deleted.]

Admiral **Lyons**. We completed Magic Sword North [deleted]. *Eisenhower* and the rest of the ships in the *Eisenhower* battlegroup then proceeded [deleted] to do Magic Sword South.

[Chart deleted.]

Magic Sword South involved primarily carrier battlegroup strikes [deleted].

So it was a very successful exercise from that standpoint. [Deleted] that was about all in Magic Sword South.

Admiral **Train**. We then got into the NATO exercise that we built the whole thing around, Exercise Ocean Safari.

[Chart deleted.]

This is of particular interest because not only was it a NATO exercise per se, but also it involved a very controversial tactic [deleted].

Senator **Cohen**. It would be the same [deleted]?

Admiral **Train**. Exactly. In this particular case we in NATO and the United States [deleted]. We were surprised to find that it was successful. We didn't expect it to be.

[Deleted.] It worked extremely well. I for one was surprised. I suspect Admiral Lyons was surprised. But, it did work.

Senator **Cohen**. Why were the allies reluctant to go with this concept?

Admiral **Train**. [Deleted.]

Senator **Cohen**. Was this strategy dictated [deleted]?

Admiral **Train**. Yes, it is. [Deleted.] It is something we were forced into [deleted].

Senator **Cohen**. It is hard to be critical of trying something new [deleted]?

Admiral **Train**. That is right. I agree with you. I think it served a very useful purpose because it was so successful in conveying not only to our allies but also to my own people that it is a valid tactic. We can apply it very successfully as long as we apply the static assets, [deleted]. This was far more of an exercise [deleted].

Senator **Byrd**. What is the area within that red line?

Admiral **Train**. That was the area in which we were conducting the [deleted] operation.

Senator **Byrd**. How many miles is that?

Admiral **Train**. [Deleted.] It is a fairly substantial area.

Senator **Byrd**. That is what you defended against [deleted]?

Admiral **Train**. Yes, sir, [deleted]. It worked out very well.

[Chart deleted.]

[Deleted.]

Then we went into phase VII [deleted]. We used the same ships and added more ships into this portion of the exercise. We had a Marine Amphibious Ready Group [deleted]. We incorporated that unit into the exercise [deleted]. That seemed to work out very well also.

[Deleted.]

[Chart deleted.]

Phase VIII took place [deleted]. It was relatively unremarkable, [deleted]. In this case we operated relatively unconstrained [deleted].

[Deleted.]

Senator **Cohen**. [Deleted.]

Admiral **Train**. No, sir. There is no reason why we should not have. [Deleted.]

We then moved on into the last phase of the entire——

Senator **Cohen**. [Deleted.]

Admiral **Train**. [Deleted.]

[Chart deleted.]

The last phase of the exercise, [deleted] was Display Determination '81, it took place in the Mediterranean under the Supreme Allied Commander Europe, SACEUR, with the primary focus being on first an exercise in the western Mediterranean, then one in the central Mediterranean, and finally one in the eastern Mediterranean, involving a large-scale amphibious landing with that Marine Amphibious Readiness Group, MARG, that I described earlier in Turkey.

CONCLUSIONS

[Deleted.]

Imaginative play by innovative U.S. Commanders was successful in maximizing U.S. weapons system effectiveness [deleted].

Free play exercises conceived and executed by accountable commanders have a greater pay off then those conceived by non-accountable analysts.

[Deleted.]

Navy programs are headed in the right direction.

[Deleted.]

We can operate effectively with allies; not only NATO, [deleted].

Control of the North Atlantic is critical to the success of the European land campaign.

U.S. Naval Forces can successfully go in harms way.

I made up a set of conclusions shown here, lessons learned, if you will, that are very, very carefully worded, which I commend to your attention. This represents the outcome of this 2½-month effort. I believe they are very significant.

For example, it is significant [deleted]. I believe Admiral Lyons described that very effectively to you. [Deleted.]

The imaginative play by the innovative U.S. commanders was successful in maximizing the capabilities our weapon systems and minimizing their limitations [deleted].

The free-play exercise conceived and executed by accountable commanders is much more effective as a training vehicle than free-play exercises conceived by nonaccountable systems analysts for the purpose of proving or disproving a weapon system or a concept or a force level.

This exercise was planned and conducted with no thought toward programing and budgeting. But, rather, for the pure purpose of conveying to the world that we could operate with our allies and operate very effectively.

We left up to our commanders in the field, both the unit commanders and individual ship commanders, the complete planning of and conduct of the exercise without any interference by systems analysts or higher level staff that might want to prove something. [Deleted.]

We firmly believe that the Navy program which has been presented to the Congress is on the right track. That wasn't what we started off to prove, but we came away with that conclusion.

We also believe on the basis of our experience [deleted].

We can operate very effectively with our allies, not only those in NATO [deleted].

Control of the North Atlantic is obviously critical to the success of the European land campaign.

Finally, we are convinced—and we were convinced before we started—on the basis of this experience that the U.S. Forces can successfully go in harm's way.

That represents, Mr. Chairman, the prepared coverage of this exercise that we are rather proud of.

We will be happy to answer any questions that we may have generated.

Senator **Byrd**. Let me ask you about one conclusion that you drew: [Deleted]—does this conclusion change in any fundamental way the basic force projection and strategy?

Admiral **Train**. No, sir. That really confirms what we have known for a number of years. [Deleted].

But in the high threat areas [deleted], it requires a concentration of force [deleted].

Senator **Cohen**. Admiral, I have a couple of questions:

I was interested in your comment about allowing it freely executed by commanders rather than system analysts. What you are saying in essence is, give somebody a job to do, go out to do it?

Admiral **Train**. That is exactly what I am saying.

Senator **Cohen**. A lot of us in the last year or so have been concerned—and not critical of it necessarily—but concerned about the kind of missions we constructed for Desert One, for example, where we had all the check points all the way back, and what that does in terms of effectiveness in carrying out a mission.

It seems to me what you are suggesting is more along the Israeli line: "Here is a job; go out and do it and don't come back until you do"?

Admiral **Train**. Yes, sir; that is exactly what I am saying.

Senator **Cohen**. I have two general questions:

The trend line is of concern to me. [Deleted.]

Under the current structure it seems that we can cope with it adequately, we have done an outstanding job, [deleted]. What does that mean in your circumstances? What are the trend lines of the future, given the kinds of ratios we are talking about, in terms of the production rates that the Soviets are engaged in and what we are engaged in? Where will that put us?

Admiral TRAIN. The *Alfa* is certainly a mobile submarine, [deleted]. Today the force ratio, as you know, in deployable combatant ships is [deleted] in favor of the Soviets. We make up for that adverse ratio by having several qualitative advantages, [deleted]. And, the Soviets have that problem of their choke points, like the Greenland-Iceland-United Kingdom, GIUK, gap.

But as their individual ships get better, then that [deleted] ratio in their favor becomes more dominant and tends to offset our own qualitative capability and tends to diminish the disadvantage wrought by the chock points.

The *Kirov*-class, 28,000-ton nuclear-powered cruiser is a case in point. There are two new classes of destroyers, *Souremennyy* and *Udaloy,* which are another case in point. The *Alfa* is a case in point, as is the submarine-launched missile. When we get into numbers vis-a-vis the Soviet navy, it is doubly important for us to keep up with our qualitative improvements by continuing to buy those things that are contained in the Navy program today, such as the *Aegis*-class cruiser, the continued procurement of F–14 and F–18 aircraft and those other things that are so important to us to maintain our position in the maritime balance.

Senator COHEN. You mentioned one point, and that is, in order to maintain at least equivalency, and one would hope that Secretary Lehman is correct, to gain supremacy, you must talk about qualitative superiority.

Admiral TRAIN. Yes.

Senator COHEN. Can you do it by qualitative measures only? For example, we go into strategic systems and back in the 1960's and 1970's we did not get too concerned about their big missiles because they weren't as accurate; then we discovered that the SS–18 was clearly as accurate as our own Minuteman III. Suddenly they have not only quantity but also quality as well.

This is going to be a question, I assume, we have to deal with here, given the [deleted] ratio, which may even increase, given their shipbuilding program?

600-SHIP NAVY TARGET

Admiral TRAIN. [Deleted.] As we get up to the administration's target of the 600-ship Navy, and what I personally believe is necessary, to the 15-battlegroup Navy, the increase in numbers between what we have today and the 600-ship Navy, plus our qualitative improvements, are probably adequate to achieve that clear maritime superiority that the administration has stated is our objective.

Senator COHEN. That preempts the question that I was going to ask you, but I will ask it anyway.

Give us your assessment of this exercise of so-called light versus so-called heavy carriers.

Admiral TRAIN. If we are going to build aircraft carriers, we should build an aircraft carrier that can survive and project power effectively. When you are buying a carrier you are not buying a hull, you are buying the ability to take airplanes to sea.

FORRESTAL-CLASS CARRIER

The *Forrestal*-class carrier can carry approximately 85 aircraft. A rule of thumb says you carry 1 aircraft per 1,000 tons, roughly 85 aircraft. If you buy a carrier that cannot carry 85 aircraft, you are not replacing capability inkind; you are accepting a degradation in your sea-based tactical air ability.

The second point is that in pricing out the cost of each airplane that you take to sea, it costs less for the larger carrier. As you get into smaller carriers you are amortizing the hotel functions powerplant over fewer aircraft and the price per aircraft is higher.

So, if you look at it in terms of cost per aircraft carried, the most efficient way to sea base tactical air is to buy the larger carrier. This turns out to be a convenient fact because the large-deck carrier is also the most survivable carrier because it has the ability to defend itself and it has the ability to absorb more damage than the smaller carrier.

I am sure you are aware than in World War II, for example, we only lost one large carrier, whereas we lost 10 of the small ones.

It is perhaps an error to think that we really have not given the small-deck carrier a chance to prove itself. We have had many, many small-deck carriers in the U.S. Navy. We had 108 of them in World War II. We operate what can be described as 12 small carriers today.

Senator **Cohen**. The Navy did place a pretty high premium on getting the *Oriskany* out last year?

Admiral **Train**. Yes, to get up to the 15 battlegroups and hold it while we build the nuclear carrier. That still remains an objective.

Senator **Cohen**. Are you saying there is no role for the light carrier to play, or that you just feel that the numbers, the costs, dictate that you keep away from that?

Admiral **Train**. I am saying you get less capability out of the smaller carriers no matter how you add them up or assemble them and package them and that they are more vulnerable, the smaller carriers. It would be, if we had a choice, irresponsible to build a carrier that doesn't have the capability and does not have the survivability that the larger carrier does. I feel that very strongly.

Senator **Cohen**. What about the numbers? The numbers are outweighed by the vulnerability, in your judgment? And besides a big deck costs what, $3.5 billion?

Admiral **Train**. Once again, you are taking 85 aircraft to sea in a big deck; if you build a 45,000-ton carrier you are going to carry 45 aircraft. To get up to the same numbers, you need two of those small carriers. Those carriers cannot operate those airplanes as effectively as one carrier can.

Senator **Cohen**. But they will be able to operate in two different areas?

Admiral **Train**. Yes, that is correct, but if you go into harm's way you have to assemble a concentration of force that will permit those carriers to survive. Admittedly, in peacetime—and you cannot forget the peacetime tasking—in peacetime you can send one of the smaller carriers to an area like the Indian Ocean to establish the dominant maritime presence, instead of the big carrier. That could be an attractive feature of the small carrier up to the point where you have to make decisions that you are going to put your carriers in another area and fight a war.

The battleship will function very well to take some of the load off, in the Indian Ocean for example, without going to the price of the big aircraft carrier.

CARRIER BATTLEGROUP GOAL

Senator **Cohen**. Given the 15-carrier battlegroup goal, is it worthwhile for this committee or the Congress to consider supplementing that 15-carrier group with smaller carriers? In other words, if you assume the core is the 15, does it make any sense to try to put less capable, nonetheless some, force projection capability off the coast of Latin American countries, Central America?

Admiral **Train**. I think that as we go into our follow-on amphibious ship program and look at the LHA's that we already have, that we should consider very seriously how we can adapt those hulls not only to the amphibious function but also to the sea-based tactical air function with more capable vertical takeoff and landing aircraft than we have available to us today.

[Deleted]. If we get into more capable V/STOL aircraft, those aircraft flying from *Nassau, Saipan* and follow-on LHD's will represent a very effective and useful augmentation to the sea-based tactical air that we have available to us today and that we will build up to as we build up to a 15-carrier battlegroup Navy.

Senator **Cohen**. The LDX?

Admiral **Train**. Yes. I think we should be serious about ensuring that that is a capable ship.

Senator **Cohen**. Senator Nunn?

NUCLEAR SUBMARINES

Senator **Nunn**. Admiral Train and Admiral Lyons, I am very impressed with the briefing. I will catch up with the middle part that I missed. I think this is very helpful. I have a couple of questions:

You mentioned a while ago that the nuclear subs are more detectable than the diesel subs?

Admiral **Train**. Yes, sir.

Senator **Nunn**. When did the Navy discover this? Has this been known for a long time?

Admiral **Train**. Yes, sir.

Senator **Nunn**. Why is that?

Admiral **Train**. The nuclear powerplant emits a noise level. The U.S. sub has a very low noise level, admittedly, but a noise level that is higher than a diesel submarine when it is operating on a battery. [Deleted.]

Senator **Nunn**. Isn't it generally true that our subs are quieter than Soviet subs?

Admiral **Train**. Yes.

Senator **Nunn**. That includes nuclear subs?

Admiral **Train**. Yes.

Senator **Nunn**. Except when they are operating on battery?

Admiral **Train**. Yes. [Deleted.]

Senator **Nunn**. What is the main advantage of a nuclear sub [deleted].

Admiral **Train**. Mobility. [Deleted.]

Admiral **Lyons**. [Deleted.]

Admiral **Train**. There is one other point I have to mention, [deleted].

Senator **Nunn**. Was that a deception?

Admiral **Train**. Yes; [deleted].

Senator **Nunn**. [Deleted.]

Admiral **Train**. I think probably so.

Senator **Nunn**. [Deleted.]

Admiral **Train**. No, sir; [deleted].

Senator **Nunn**. You mentioned that the nuclear sub's speed was one of the main functions. You know when the Soviets came out with their submarine that was much faster—I have forgotten the numbers on this——

Admiral **Train**. The Alfa [deleted].

Senator **Nunn**. Yes. How does that compare with our nuclear sub in speed?

Admiral **Train**. [Deleted] faster.

Senator **Nunn**. How much faster is our nuclear sub than our diesel sub?

Admiral **Train**. I commanded the fastest diesel sub that we had in the U.S. Navy. Its top speed [deleted].

Senator **Nunn**. How fast is the nuclear?

Admiral **Train**. The nuke [deleted].

Senator **Nunn**. [Deleted.]

Admiral **Train**. Yes, sir.

Senator **Nunn**. The answer we heard from the Navy at that time [deleted]?

Admiral **Train**. [Deleted.]

Senator **Nunn**. [Deleted.]

Admiral **Train**. Yes, sir, [deleted].

Senator **Nunn**. So you are not saying speed is not an important factor then?

Admiral **Train**. It is an important factor [deleted].

Senator **Cohen**. [Deleted.]

Admiral **Train**. Yes, sir.

Senator **Cohen**. It is a kind of Mexican standoff at that point?

Admiral **Train**. [Deleted.]

Senator **Nunn**. One other line of questioning: You say up there on this chart, the third from the last, [deleted].

Admiral **Train**. I am saying that the basic Atlantic strategy [deleted].

Senator **Nunn**. So, for this tactic to work you have to [deleted].

Admiral **Train**. Yes, sir.

Senator **Nunn**. [Deleted.]

Admiral **Train**. [Deleted.]

Senator **Nunn**. [Deleted.]

Admiral **Train**. [Deleted.]

Senator **Nunn**. I am glad you did this, but isn't this indeed becoming part of our naval strategy? I have heard the Secretary of the Navy posture this as part of our strategy at least on two occasions, and I just don't understand it. I am all for having as many carriers as we can afford, [deleted].

Admiral **Train**. [Deleted.]

Senator **Nunn**. [Deleted.]

Admiral **Train**. That is correct.

Senator **Nunn**. Would that same thing apply [deleted].

Admiral **Train**. You have to assume [deleted].

Senator **Nunn**. I do assume that.

Admiral **Train**. Assuming that, then that becomes a very feasible course of action which should be explored [deleted].

Senator **Nunn**. I understand the limitations of that. [Deleted.]

Admiral **Train**. Absolutely [deleted].

[The information follows:]

[Deleted.]

Senator **Nunn**. Let me ask you this: What number of carriers do you have to have [deleted].

Admiral **Train**. Yes, sir. The availability of carriers varies over the course of the year, primarily because we have insufficient assets. As you know, of my seven carriers I have one in the service life extension program. It will be locked up in that program for 28 months. That drives me down to six aircraft carriers. Of those six carriers I normally can expect to find one in the Indian Ocean and one in the Mediterranean. We really ought to have two in the Mediterranean, but we only have one there because we had to move that one into the Indian Ocean. So, that leaves me four aircraft carriers with which I can meet my Atlantic commitment.

[Deleted] haven't had an aircraft carrier in a full ship overhaul in the Atlantic in the 3½ years I have been CINCLANTFLT.

It is coming to the point where we are going to have to start putting carriers into overhaul. They are scheduled. Those overhauls will last in excess of a year.

Senator **Nunn**. How would you describe our maritime strategy in the Atlantic now; what do you understand our naval strategy to be in the Atlantic?

Admiral **Train**. [Deleted.]

Senator **Nunn**. In other words, contrary to this particular situation, your primary role in order to fulfill your number role, your primary tactic [deleted].

Admiral **Train**. That is right, sir; but in order to carry out that strategy, [deleted].

That is the significance [deleted].

Senator **Nunn**. How does the term "horizontal escalation"—and I don't know what the precise definition of that is—but in the posture statement we have references [deleted] and that has been defined by some people as "horizontal escalation."

How does that fit in the naval strategy in the Atlantic; [deleted].

Admiral **Train**. That works both ways. [Deleted.]

Senator **Nunn**. [Deleted.]

Admiral **Train**. That is right. [Deleted.] It cannot be done. [Deleted.] That is a two-edged sword. [Deleted.]

Senator **Nunn**. [Deleted.]

Admiral **Train**. [Deleted.]

Senator **Nunn**. How would that work? [Deleted.]

Admiral Train. [Deleted.]

Senator Nunn. Like where?

Admiral Train. [Deleted.]

Senator Nunn. What about the Atlantic?

Admiral Train. [Deleted]. They do have forces in the South Atlantic [deleted]. We can go down in the South Atlantic [deleted].

Senator Nunn. [Deleted.]

Admiral Train. Yes. [Deleted.]

Senator Nunn. I am talking about yours.

Admiral Train. [Deleted.]

Senator Nunn. I assume you make that clear all the way up the line?

Admiral Train. I continually make that clear, Senator Nunn.

Senator Cohen. That is assuming a 15-carrier battlegroup?

Admiral Train. The numbers, Mr. Chairman, that I cited to Senator Nunn are based on the forces available to me today, my seven carriers, with one of those seven being in SLEP. I presume that as we move up to the 15-carrier battlegroup Navy, that I personally feel we should have, I would acquire another two carriers which would allow me some flexibility [deleted].

Senator Cohen. One of the things that has concerned us for some time now is whether or not we are deceiving ourselves in terms of our worldwide obligations.

For example, the RDF, which this subcommittee also has jurisdiction over, [deleted].

Admiral Train. [Deleted.]

Senator Cohen. [Deleted.]

Admiral Train. [Deleted.]

Senator Cohen. Good luck. [Deleted.]

Admiral Train. I hope you don't think I am trying to minimize the problem. I am not. I am merely pointing out in assessing priorities [deleted]. I don't want to minimize the problem.

Senator Nunn. [Deleted.]

Admiral Train. [Deleted.]

Senator Nunn. You mean you could consider rejecting it?

Admiral Train. Probably, yes.

Senator Cohen. [Deleted.]

Admiral Train. I have to confess that within my assets I have to give you an answer that I always hate to give: I don't know.

Senator Cohen. [Deleted.]

Admiral Train. They have a problem.

Senator Cohen. Gentlemen, thank you very much.

I would like to say that I am going to adjourn based on your condition, Admiral Lyons, but I think the truth of the matter is we have other commitments we are going to have to keep. You both have been very, very helpful. It is an extremely helpful presentation.

Admiral Train. We appreciate the opportunity.

[Whereupon, at 4:30 p.m., the subcommittee was adjourned.]

Blank Page

3848

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

THURSDAY, MARCH 18, 1982

U.S. SENATE,
SUBCOMMITTEE ON SEA POWER AND FORCE PROJECTION,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

FORCE PROJECTION: CAPABILITIES AND PROGRAMS

The subcommittee met in open session, pursuant to notice, at 2:35, in room 212, Russell Senate Office Building, Senator William S. Cohen, chairman, presiding.

Present: Senators Cohen and Byrd.

Staff present: L. Wayne Arny III, Robert S. Dotson, James R. Locher III, professional staff members; Mark B. Robinson, research assistant; Kathleen L. McGuire, staff assistant.

Also present: George Kohl, assistant to Senator Humphrey; Jim Dykstra, assistant to Senator Cohen; Paul Schreiber, assistant to Senator Denton; Gray Armistead, assistant to Senator Byrd; Bill Lind, assistant to Senator Hart.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator COHEN. The subcommittee will come to order.

Today's hearing is focused on maritime elements of the U.S. force projection capabilities. Four program areas are going to be addressed: sealift and maritime pre-positioning; amphibious ships and craft; naval gunfire support; and light armored vehicles.

Despite the importance of these program areas to the projection of U.S. military power, each one endured a period of neglect during the decade of the 1970s. Only in the last several years has the United States begun to revitalize its capabilities in these areas, and it is far from certain that the currently proposed programs are even adequate to do the job.

On behalf of the subcommittee, I would like to welcome the witnesses for today's hearing: Vice Admiral Carroll, Commander of the Military Sealift Command; Vice Admiral Cowhill, Deputy Chief of Naval Operations for Logistics; Vice Admiral Walters, Deputy Chief of Naval Operations for Surface Warfare; Lieutenant General Miller, the Marine Corps Deputy Chief of Staff for Plans, Policies and Operations; and Brigadier General Pihl, Deputy Director of Weapon Systems for the Army.

The subcommittee is anxious to hear the testimony of the witnesses on these important programs, and particularly in light of the fact that the subcommittee is going to begin its markup portion of the fiscal year 1983 authorization request next week.

The subcommittee members have before them, those I hope will be coming later today, sheets prepared by the committee staff that display the full spectrum of maritime force projection programs that the subcommittee has responsibility for. From this list, there are a wide number of issues that could be addressed during today's hearing. But given the very limited time that we do have available to us, I think it is important that the following five areas be comprehensively addressed.

The use of the convert and charter approach and O. & M. funding to acquire certain sealift and maritime pre-positioning ships instead of direct procurement. We went through that particular battle last year and I assume we are going to go through it again this year.

The hospital ship program—what hulls are being considered for conversion?

The importance of the LHD-1 program for amphibious shipping capabilities—the VSTOL aircraft support capabilities of this ship will be discussed during tomorrow's hearings on aircraft carriers.

Programs to expand naval gunfire support.

The status and cost control of the light armored vehicle program.

I think it will be helpful, for my purpose at least, to hear the oral statements from all five witnesses before turning to any questions, and I would recommend the following order, unless there is any objection: Admiral Carroll, Admiral Cowhill, Admiral Walters, General Miller, and then General Pihl.

Gentlemen, if you could, try to limit your presentation to roughly 5 minutes each. That would be very helpful. We would be happy to hear your statements.

STATEMENT OF VICE ADM. KENT J. CARROLL, U.S. NAVY, COMMANDER, MILITARY SEALIFT COMMAND

Admiral CARROLL. Mr. Chairman, I am very honored to be here today. My statement is about 15 minutes long so I would like to summarize it if I may.

I do not think it is an exaggeration to state that since the late 1960's the military has pursued sealift with relentless apathy. In other words, we have almost totally ignored it.

Senator COHEN. Is that the equivalent of benign neglect?

Admiral CARROLL. Almost the same, yes, sir.

Yet for the past few months, Adm. Thomas Hayward, our Chief of Naval Operations, has made numerous statements that without adequate and reliable sealift, literally none of our war plans are executable.

How could we have ever ignored sealift? There are several reasons that come to mind. One, during the past conflicts, such as Korea and Vietnam, we have had a very healthy merchant marine. We had a very strong, viable national defense reserve fleet.

But second and equally important, since the late 1960's when we started withdrawing from Vietnam, we, in the Joint Chiefs of Staff area and in the National Security Council, have concentrated almost exclusively on the rapid reenforcement of NATO, and in that reenforcement we have concentrated on the first 2 or 3 weeks of reenforcement. In that scenario, we have concentrated almost totally on airlift and pre-positioning, and ignored sealift.

Another area that masked sealift was that NATO has earmarked 600 of the most productive ships for a NATO shipping pool of which 400 would be available to us.

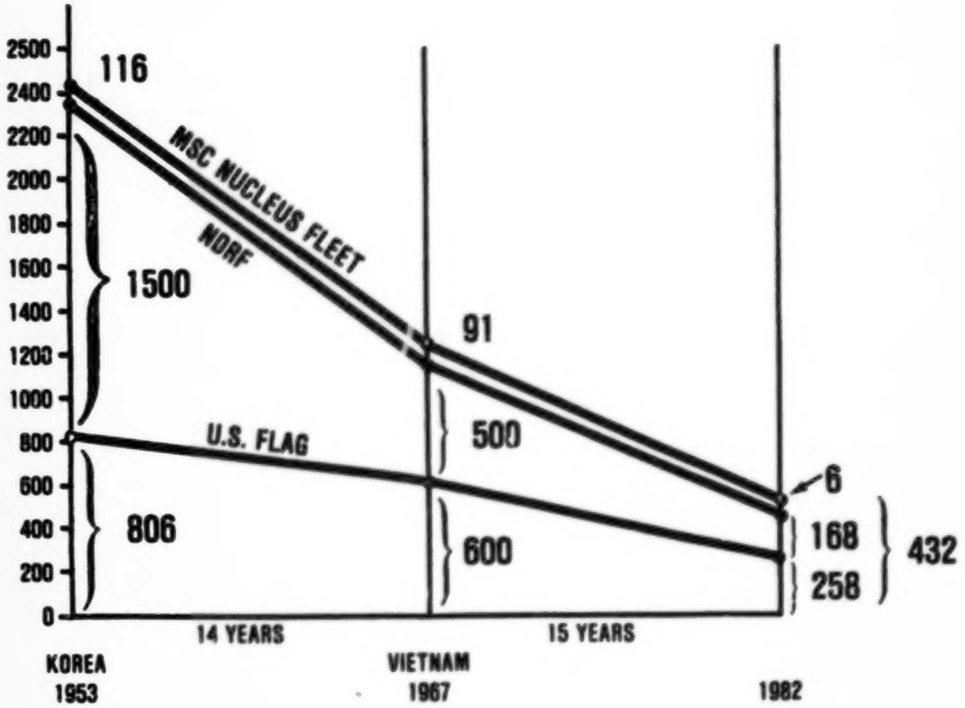
However, when you look at the demands for force deployment and substainability over the next decade, you cannot focus on any one area in the world in isolation and say that is the only area where we are going to need Army, Air Force, Navy or Marine units. Our forces must be flexible enough to meet projected requirements in NATO, the Western Pacific, Korea, Southwest Asia, Central America, or wherever else the challenge comes from.

Now if the whistle blows this afternoon, do we have the necessary sealift to deploy and sustain combat power anywhere around the world? I do not think so. Statistics paint a very grim picture. It is a sobering fact to think that during World War II more ships were sunk than we have in the entire U.S.-flag fleet today. Now I would like to show you just two slides that I think will make my point.

This slide looks at sealift from a historical perspective of what we in the military could draw upon. It shows only the dry cargo ships. On the vertical axis is shown the number of dry cargo ships available to the military. On the horizontal axis we are looking at time: Korea, Vietnam, and today.

U.S. DRY CARGO SHIP RESOURCES

(IN NUMBER OF MILITARY USEFUL HULLS)



During Korea we had 2,400 dry cargo ships that we could draw upon from the U.S.-flag fleet, from a very healthy, new, strong National Defense Reserve Fleet, and from the military fleet. We used about 17 percent of the total ships available during the period of the Korean conflict. In Vietnam, 15 years later, the number of ships we had available to draw upon was half—2,400 down to 1,200 ships. During the Vietnam conflict we used almost 42 percent of the available ships.

This afternoon if we have to deploy overseas other than to Europe all we can call upon is 432 dry cargo ships. If we have to deploy the amount of tonnage that we did during Vietnam, in the peak year of 1968, we would require almost all of the ships that are available.

Look at the type of ships we have available. Today the U.S. merchant marine is down to 258 militarily suitable dry cargo ships. They are container ships primarily, very productive in the international trades, but for military purposes really not very usable for combat power because over 80 percent of the armored or mech division unit equipment will not fit in containers.

About 130 of our National Defense Reserve Fleet ships are World War II Victory ships. Reliable? It is questionable about how fast we could bring them on board. We have very few modern breakbulk ships left in the Military Sealift Command Controlled Fleet.

Senator COHEN. What prospect do you see for changing the way in which we construct our merchant marine so that it can be integrated into military purposes?

Admiral CARROLL. The prospects to me are very discouraging. The trends are down. With the loss of construction differential subsidies, if the building of U.S. merchant ships in U.S. yards is not dead, it is in a deep coma and the deathwatch is on. It is very bleak indeed.

Senator COHEN. We have three votable votes for you already and the 5 minutes has not even gone by.

Admiral CARROLL. Next slide. This is where we stand today, versus Vietnam in 1967. In Military Sealift Command today, we have 73 ships that we could draw upon to deploy combat power: That is unit equipment, tanks, artillery, and the resupply, the ammunition and the fuel.

MSC SEALIFT

1967 (RVN) VS 1982

	1967 NO. OF MSC CONTROLLED SHIPS - WORLDWIDE	1982 NO. OF MSC CONTROLLED SHIPS - WORLDWIDE
USNS		
DRY CARGO	91	6
TANKERS	26	23
NDRF	166	0
CHARTER		
DRY CARGO	172	24
TANKERS		
(DIRTY)	14	8
(CLEAN)	42	12
	511	73

104 TANKERS UNDER MSC CONTROL IN 1969
158 SHIPS IN AMMO PIPELINE IN 1968

In Vietnam, during the peak year of 1967 we had 511 ships we employed. If we go to Korea, I can make a strong case that we would require a capability to deploy more combat power today to go into Korea than we did in Southeast Asia in 1967–68 because we might be supporting over 20 ROK divisions plus our own reenforcement.

If we go to Southwest Asia, I can make a strong case also that the lift requirement will be at least as much as we had to deploy in Southeast Asia in the 1967–68 time frame.

I do not know where we get the difference. I do not know how we go from that 73 ships under MSC control to the 511 ships we will need. We are in deep trouble today.

Senator COHEN. If we had to deploy ships to the Persian Gulf or the Indian Ocean and at the same time try to deploy ships to Western Europe, could we do it?

Admiral CARROLL. In my opinion, no. Going to Europe is much easier than going to Southwest Asia. We have the NATO pool ships. It is really easier deploying to Korea or to a NATO conflict than to Southwest Asia. Southwest Asia is the most difficult strategic mobility problem we have. The distances are tremendous and we have no host nation support, and no pre-positioning ashore. It is a very, very difficult place to get to.

Senator COHEN. How does that impact upon our so-called Rapid Deployment Force?

Admiral CARROLL. Severely. I have been in this business for about 4 years now of how we deploy our combat troops and their equipment to sustain them anywhere in the world. I was on the Joint Staff for 4 years, the last 2 years as Director of J–4, and we worked on the war plans daily.

A year and a half ago, we started thinking about the problems of going to Southwest Asia, and sealift really has come into vogue since 1979 with the events in Southwest Asia, and you are very familiar with those. But a year and a half ago when we first started putting this package together a number of us were absolutely convinced that we could not deploy to Southwest Asia rapidly and then sustain a military effort there to be reasonably sure of success against a reasonably strong adversary.

We are doing much better today, we have almost doubled our capability to put unit equipment and resupply into that part of the world in the first 30 days due primarily to Navy enhancement programs. I am specifically referring to the near-term pre-positioning force with the 13 ships we now have in the Indian Ocean. We have enhancement programs coming down the line, imcluding the expansion of the near-term pre-positioning force, and we are talking about the capability to deploy three Marine amphibious brigades with their equipment pre-positioned. In the next 3 years when our fast sealift program, which is based around the SL–7's comes on line, we will almost triple our capability. It is pretty exciting what we are doing right now.

I have finished my statement, sir.

[The prepared statement of Admiral Carroll follows:]

PREPARED STATEMENT BY VICE ADM. KENT J. CARROLL, USN, COMMANDER, MILITARY SEALIFT COMMAND

Good afternoon, I very much appreciate the opportunity to testify before you today.

In my prepared statement I would like to focus on what our sealift capability is now and why we need increased capability. I also wish to discuss the programs Navy recently has initiated to help overcome our most pressing deficiency—the shortage of "near term" sealift—by "near term" I mean rapid sealift that can be counted upon for delivery of equipment in the initial weeks of any potential conflict.

Navy as the single manager for all DOD oceanborne cargo has the responsbility of meeting this challenge. We are Defense's interface with the Merchant Marine.

Following my opening remarks, I am prepared to discuss with you, in closed session, the classified elements of sealift requirements versus capabilities.

Sealift plays a vital strategic mobility role in projecting and sustaining our nation's fighting forces. In a large deployment, it would deliver armored and mechanized forces as well as support forces, resupply and ammunition.

All of our mobility programs consisting of a mix of military and civilian aircraft and ships augmented by pre-positioned unit and equipment supplies must be at full strength if we are to meet the long term goal outlined by Secretary of Defense Weinberger in the Defense '83 budget: "to meet the demands of a worldwide war, including concurrent reinforcement of Europe, deployment to Southwest Asia and support in other potential areas of conflict." We have a long way to go before meeting this goal.

I see only two bright spots in the strategic mobility picture. We are very efficient in moving passengers or troops outside the continental U.S. by air and we are capable of moving the same forces from depots inside the U.S. to airports or seaports of embarkation rapidly. Unfortunately, this is balanced by weak spots in our mobility posture. We lack heavy cargo airlift, our sealift programs are deficient across the board, and we need to develop the capability to offload in an objective way, marry up with trops and proceed to an objective area.

I recognized this during the four years I spent in the Organization of the Joint Chiefs of Staff. There we contemplated daily how to deploy our combat troops with their equipment, how to sustain this force anywhere in the world and how to accomplish this task if the whistle blew right this moment. All of our programs were based on finding the right mix of the elements of the strategic mobility triad of airlift, sealift and pre-positioned materiel, and time after time, in analyzing operational requirements it became clear that sealift would be crucial to the ultimate success or failure of any deployment. Sealift became an important player in a wide range of contingencies.

Before I go any further, I want to make it clear I am not demeaning the importance of airlift or the necessity for pre-positioning certain equipment and supplies in forward areas.

Each mobility program has a distinct role in meeting the overall requirement. Airlift is fast, flexible, and sometimes the only option available in the early stages of contingency, but it is also expensive and has a limited capacity. Sealift can move large amounts of equipment and supplies, but lacks the speed and, therefore, some of the flexibility of airlift. Pre-positioning complements both airlift and sealift but is politically sensitive and less flexible. Maritime pre-positioning provides an alternative to land-based programs when political considerations or the need for flexibility constrain land-based pre-positioning.

However, both historical experience and our analyses of the future show that more than 90 per cent of wartime cargo will go by sea, in merchant type ships, regardless of where the conflict is. Without this cargo, our fighting forces would not be able to sustain combat of any significant duration. The Chief of Naval Operations Admiral Hayward summed up the situation very succinctly this year: "Without adequate and reliable sealift, literally none of our military plans are executable." From the Department of Defense perspective, Navy is charged with the responsibility of ensuring that sealift is there when needed.

Navy can draw on four basic sources of sealift: the MSC Controlled Fleet, the National Defense Reserve Fleet, the U.S. Merchant Marine, and ships of foreign registry.

MSC Controlled Fleet ships are, of course, in-hand assets and available for both nonmobilization and mobilization scenarios. MSC nucleus ships are part of a government fleet and manned by civilian mariners. Ships under MSC charter, of course, belong to civil industry and are manned by union crews. Militarily useful dry cargo in this fleet currently number about 30.

The second source is the National Defense Reserve Fleet, or NDRF, which is administered by the Maritime Administration. These ships will be available during mobilization, assuming that a national emergency would be declared. Total NDRF strength is currently about 170, including Ready Reserve Force ships, which I will discuss next. Briefly stated, NDRF ships represent a significant lift capability, although most of them are World War II Victory ships and would require about 21 to 60 days for activation.

The Ready Reserve Force—RRF—represents a very fine, joint Navy/MARAD initiative to enhance sealift readiness. It is a special segment, or sub-set of the NDRF. Navy and MARAD started the program over four years ago to select and upgrade the best and most useful ships from the NDRF. This puts them in a five-to-ten day readiness status for contingency use.

The U.S. Merchant Marine is by far the largest single source of strategic sealift. There are two specific mechanisms other than voluntary charters through which we can obtain the use of these assets: the Sealift Readiness Program and Requisitioning. Ships are obligated under the Sealift Readiness Program (SRP) if they received construction or operating subsidies, or in return for carrying Department of Defense cargo during peacetime. SRP ships are intended for utilization where there is no national emergency or mobilization and they can be called up through joint agreement and action by the Secretaries of Commerce and Defense.

Requisitioning—or purchase—of U.S. flag ships by the Secretary of Commerce is authorized in the Merchant Marine Act of 1936 whenever the President declares a national emergency or "proclaims that the security of the national defense makes it advisable."

The last source of sealift augmentation are foreign flag ships. Our European NATO allies have agreed to augment the U.S. flag initial lift capability with 400 European NATO cargo liners in a NATO mobilization situation. The Maritime Administration accomplished this for us through its participation in NATO's "Planning Board for Ocean Shipping" and MARAD maintains an up-to-date listing of these ships by name and type.

We also can draw upon the "Flag of Convenience" ships or ships of the "Effective U.S. Controlled Fleet." This category is limited to only ships registered in Panama, Liberia, and Honduras; they must be ships of companies that have more than 50 per cent stock U.S.-owned, and they have an agreement with MARAD or war risk insurance as an inducement for return to U.S. control in time of war or a national emergency. There is only a small number—less than 10—militarily suitable dry cargo ships in this category today. We do not include them in our planning because we think they would most likely be used by the Maritime Administration in support of the civil economy, if recalled.

Despite the existence of other sources of sealift augmentation, a strong and viable Merchant Marine remains an absolute prerequisite to the deployment of U.S. military forces in any significant quantity outside our continental boundaries.

However, it's no exaggeration to say we don't have a strong and healthy U.S. Merchant Marine today. We lack the capability to move our combat forces and their necessary support rapidly to any corner of the world. And it's no exaggeration to say that defense planners from the 60's until recently pursued sealift with relentless apathy. Apathy was a dangerous course!

We are taking steps today to remedy decades of neglect of our sealift resources, but the question remains: "Why was it ever possible to underrate the value of sealift?"

Several reasons come quickly to mind.

First, traditionally in past conflicts, a strong and healthy U.S. Merchant Marine was there for the asking. We had enough of the right kinds of ships for sealift and they were backed up by a substantial reserve fleet. There was no need for military strategists to plan or fund for merchant shipping that they might need in war—diversion of existing commercial shipping to contingency needs fulfilled requirements.

Second, over the last decade, we have concentrated in our planning almost exclusively on NATO and the defense of Western Europe, and that focus has been on the short war approach. That short war would consist of defending successfully against a massive Warsaw Pact surge in a few weeks. We have concentrated on the build-up of combat power in the early time frame of reinforcement. That has meant concentrating largely on airlift and pre-positioning and over the past decade we have built up massive amounts of pre-positioned materials in Europe. The serious need for more U.S. sealift capability was further masked by NATO European allies having earmarked well over 600 cargo vessels specifically for NATO reinforcement by U.S. forces. These two facts and the underlying assumption that a NATO conflict will be a relatively short war have obscured the need for adequate sealift resources to meet contingencies elsewhere in the world.

However, in looking at the demands for force deployment and sustainability over the next decade, it is clear we cannot focus on any particular area of the world and say that it is the only area needing Navy, Marine, Army and Air forces.

The forces we need are going to have to be flexible enough to meet projected needs in NATO, the Western Pacific, Middle East, Southwest Asia-Persian Gulf area and wherever else the challenge comes from. General Maxwell Taylor, in a recent Washington Post article, discussed what he defines as force "task readiness", a measurement which specifically includes air-sea tranportation capability to both deploy and sustain a force—a capability that concerns me.

In 1979, events in Southwest Asia proved the wisdom of abandoning our NATO-war-only thinking, and recently the region has been further unsettled by the assassination of Anwar Sadat. Sealift will be of critical importance in any Persian Gulf deployment. Sealift has become a glamour stock.

There is no denying there has been a renaissance of sea power in this country recently—but it's been mainly on the Navy combatant side. More gray hull Navy combatants are being added to control the seas and protect our sea lines of communication (SLOC's). But during a major overseas contingency operation today, our own SLOC's might have to be filled largely by foreign flag ships. That doesn't make sense to me.

If the whistle blows this afternoon, do we have the requisite sealift resources to deploy and sustain our combat power outside the U.S. in support of national security objectives? I don't think so. Statistics paint a grim picture.

It is a sobering fact that during World War II more U.S. ships were sunk than there are in the entire U.S. flag fleet today.

During the Korean War, an average of 400 dry cargo ships were employed to sustain the deployment, representing 17 per cent of total U.S. assets. At that time, 2,400 dry cargo ships were available from the National Defense Reserve Fleet, U.S. flag fleet and MSC Controlled Fleet.

In Vietnam during the peak sealift year of 1968, the MSC Controlled Fleet averaged 420 ships, or 36 percent of U.S. total assets.

If a similar contingency occurred today in Southwest Asia requiring a sealift capability comparable to the Korean or Vietnam conflict, about 350 dry cargo ships would be needed—and that would represent 75 percent of today's total available resources.

The bottom line is that in Korea in 1953 we had more than 2,400 dry cargo ships available. Today we can count on about 430 dry cargo ships. While total deadweight tonnage has not declined precipitiously, we now have fewer ships and the preponderance of ships are configured for containers. These ships are not as useful for the military as roll-on/roll-off vessels, barge carriers, and fast breakbulk types.

Today, the National Defense Reserve Fleet has declined to 170 ships, of which 129 are remnants of the original Victory ship fleet—all built during World War II; they are obsolete, with an average age of 40 years.

Navy is looking for a solution. Restrictions on construction and operating subsidies threaten to accelerate the decline of our maritime industry. We expect by mid-year that about 30 cargo ships will be in excess of industry needs. Navy is looking for a way to acquire these ships and place them in the Ready Reserve Force (RRF) of the NDRF. RRF ships are kept in a 5–10 day readiness. We plan to increase the size of the force to 40 ships by fiscal year 1986 and our eventual goal is 77 RRF ships, including 16 tankers. Ships that are in the RRF today could be retired to the main body of the NDRF, thus improving the quality of ships held in reduced readiness.

Without a strong and healthy merchant marine and without a sizeable, relatively modern reserve fleet, the Defense Department has looked to other alternatives. For the first time in peacetime we are procuring merchant ships to fulfill wartime contingency requirements.

MSC is involved in three major enhancement sealift programs to support Marine Corps, Air Force, and Army deployments anywhere in the world. These programs are: an expanded Near Term Pre-positioned Force (NTPF) in the Indian Ocean; a rapid reinforcement package of eight 33-knot SL–7s, and a maritime pre-positioned ship (MPS) package. Ships in these programs are or will be chartered or purchased from the U.S. Merchant Marine, manned by civilians, and will be operated by private contractors. Cargo carried by these ships will help meet a deployment's immediate requirements for the first month or so of a contingency and considerably reduce the response time of our sealift forces. I'd like to give you a few details about each program.

Today we have one example of maritime pre-positioning in existence—the NTPF in the Indian Ocean. This program greatly reduces response time to the region and provides a test for larger maritime pre-positioning efforts. Thirteen chartered merchant ships with civilian crews are on station in the Indian Ocean loaded with enough equipment and supplies to support a brigade sized Marine Air Ground Task Force (MAGTF), of about 12,000 troops, for about 30 days plus selected sustaining supplies for Air Force and Army Units. The force was expanded from seven to thirteen ships during the past year but is essentially an interim measure only.

Over the next five years we plan to replace the NTPF with an expanded Maritime Pre-positioned Ship Program.

We are working on a program to pre-position at sea selected unit equipment and supplies of three brigade sized MAGTFs—that's about 46,000 troops. Marines would be airlifted to the trouble spot, marry up with the equipment pre-positioned at sea, and then proceed to the objective area. This would be one way around the staggering logistics problem of rapidly supplying and sustaining combat forces deployed far from home in areas where they have little or no pre-positioned materials on land or assurance of host nation support.

Originally we planned to acquire 12 TAKX—multipurpose ships able to carry diverse cargo from containers, breakbulk, and ro-ro cargo—through a combination of new construction and conversion but budget constraints required us to look at other alternatives. As a result we are pursuing a convert and charter alternative. It is an initially cheaper alternative but still will allow us to stick to our schedule for full implementation of the MPS concept. We hope to have the required ships for all these MABs under charter by fiscal year 1986.

Navy has issued a Request for Proposals (RFP) for MPS ships that calls for construction or conversion of existing ships in U.S. shipyards to ro-ro configuration and then subsequent time charter to MSC. Up to 15 ships may be chartered for up to 25 years with the first group of ships tendered for charter in fiscal year 1984. Charter rates will cover cost of conversion plus a reasonable profit for owners.

The third program I mentioned was the SL-7 conversion or Fast Sealift Program. The Navy recently purchased six large containerships from Sea-land, the SL-7s, and later this year we will purchase two more for a total of eight. The purchase of this eight-ship package was authorized and appropriated by the Congress in fiscal years 1981 and 1982. These 33-knot ships can carry tremendous amounts of cargo and after conversion to ro-ro configuration will be able to load or off-load in one day the majority of the unit equipment (tanks, artillery, wheeled vehicles, etc.) needed for two Army heavy mechanized or armored divisions.

Contracts for four SL-7 conversions will be awarded this fall to two or perhaps three shipyards, and hopefully the remaining four SL-7s will be converted in 1983. Each complete conversion of an SL-7 to ro-ro configuration will generate about $75 million worth of business for the U.S. shipbuilding industry.

These ships are the fastest merchant ships in the U.S. Flag Fleet and give us tremendous flexibility. They can sail to Europe from the U.S. East Coast in four days or to the Persian Gulf in about 11 days via the Suez Canal.

In addition, a 12-ship augmentation for the SL-7 Fast Sealift Program is planned. These ships will also be ro-ro's and capable of deploying two additional Army divisions.

MSC is involved in yet another program to support an overseas deployment of U.S. forces. Navy has been interested in acquiring sea-based medical facilities for some time. MSC is now embarked on a solid program to convert and acquire hospital ships to support deployed forces. A design phase for these critical ships has been initiated and we expect to award a contract for the conversion and outfitting of the first hospital ship in fiscal year 1983 and a second ship in fiscal year 1984. The first ship should be available in fiscal year 1986.

In a related effort, MSC currently is in the process of modifying one of their dry cargo ships for positioning a rapid deployable medical facility (RDMF) in the Indian Ocean as part of the NTPF. It is planned to replace this interim ship with an articulated tug-barge (Artubar) as part of the NTPF.

In addition to these programs, MSC is steadily upgrading and expanding its nucleus fleet. Nucleus Fleet ships form the very core of our immediate response capability and represent both government owned ships and merchant ships under long-term charter. All are manned by civilian crews, many of them Civil Service mariners. Fleet modernization programs include a build and charger program for five new 25,000-30,000 tankers (T-5s) and new MSC construction. Navy's increased recognition of the importance of sealift is reflected in the 1982 budget. Nine of the 22 Navy ships marked for new construction will go to MSC for operation. If you add in the oilers which are being built under the build and charter program, Navy is constructing 27 ships, of which more than 50 percent will to to MSC.

Finally, heavy maritime industry emphasis on containerization has increased productivity but it has also increased dependence on modernized port facilities for both loading and discharge. Deployments to comparatively undeveloped discharge areas or through damaged ports dictate the development of programs to support the offload of containerships and the discharge of breakbulk cargo and POL.

Navy is developing a heavy lift crane and cargo ship combination or Temporary Container Discharge Facility (TCDF) to offload non-self-sustaining containerships.

The figure of $71 million for TCDF is included for the period fiscal year 1982–1988 but this is still under-funded.

All of the sealift programs I have mentioned so far translate into business for the U.S. maritime industry. In fact, they could amount to more than $15.9 billion in revenue to the maritime industry between now and fiscal year 1986. This includes $5.5 billion in new MSC ship construction, $1.2 billion in anticipated construction and conversion activity financed by the private sector in response to MSC charter programs, and $9.2 billion in industrial fund expenditures for operation and maintenance of the MSC Controlled Fleet.

As long as we are discussing statistics, I would like to show you some rather striking figures that illustrate the expansion of MSC's activities in wartime. I personally don't know of a military organization that expands as much as MSC does in a mobilization.

Ships under our control will jump from approximately 144 peacetime to over 1,100 subsequent to full mobilization—that's more than double the number of Navy commissioned Men of War.

Personnel will swell from a peacetime worldwide workforce of over 9,000 to a wartime figure of over 90,000, and five Reserve flag officers will be ordered to active duty in key MSC positions around the world along with more than 6,000 enlisted personnel. The flag officers assigned to MSC mobilization billets represent one-third of the total surface Naval Reserve flag officers in the Navy.

Finally, full mobilization average daily expenditures will hover around $35.8 million (exclusive of war damage and repair costs), compared to peacetime expenditures of $7.6 million daily.

Over the last year and a half, there has been a major effort within Defense to enhance our ability to deploy and sustain forces. As a reflection of the importance of sealift in this effort, last year MSC was upgraded to a 3-star command, a 2-star deputy was added and the MSC/NCSORG Naval Reserve Programs were dramatically expanded in both number of units and personnel by nearly 50 percent.

Even more telling has been the increased funding for programs to increase our nation's sealift capability. During fiscal year 1982–86, Navy funding for sealift initiatives which will be operated by MSC is at a level 300 percent higher than five years ago. I feel confident that sealift has now taken its rightful place of importance in strategic mobility planning. Sealift is no longer a neglected stepchild.

Senator **Cohen**. If you will excuse me, I have to go over to vote and I will be back in less than 5 minutes.

We will stand in recess for 5 minutes.

[Recess.]

Senator **Cohen**. The committee will come to order. Admiral Cowhill?

STATEMENT OF VICE ADM. W. J. COWHILL, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS), OFFICE OF THE CHIEF OF NAVAL OPERATIONS

Admiral **Cowhill**. Mr. Chairman, I have provided a statement which I will summarize from to talk about the status of our major strategic sealift programs. Strategic sealift being a fancy phrase for those merchant marine ships that support our military operations.

Recognizing the serious deficiencies in this area that Admiral Carroll has already outlined, we started in the last few years in a number of major programs to correct those deficiencies and to upgrade and revitalize the strategic sealift capability. Let me briefly describe those five basic programs.

PRE-POSITIONING FORCE

The first of these is the near-term pre-positioning force. We continue to fund through the 5-Year Defense Plan for the charter of those merchant ships that constitute this force. The initiative started in 1980 with seven ships. It was added to by the fiscal year 1981 appropriation for six more ships. These 13 ships provide 33 days of sustainability for the Marine amphibious brigade, as well as some ammunition, fuel, and water for all services.

This force will increase by one more ship in the next couple of months when we pre-position a 1,000-bed Rapidly Deployable Medical Facililty to provide casualty care for the Marine amphibious brigade.

FAST SEALIFT

The next or second program is the fast sealift program. That consists of the eight large container ships referred to frequently as SL-7's. Six of those ships were purchased in August 1981, with an option for the purchase of the last two this fiscal year. The first six ships are being prepared to enter the Ready Reserve Fleet awaiting conversion. They are in a 5-day readiness status if we should have need for them as container ships.

Funding was provided for the conversion of the first four of those ships, four of the total eight, in the fiscal year 1982 appropriations. In the fiscal year 1983 program we are requesting funding for conversion of the remaining four ships. Conversion of all ships we consider absolutely essential in order that we can lift the required combat equipment for two heavy mechanized divisions.

PRE-POSITIONING SHIPS

The third major program involves acquisition of ships specifically designed for pre-positioning of combat equipment. This Maritime Pre-positioning Ship program, as it is called, will consist of 12 to 15 TAKX ships, and these are the ones that I think you referred to, Mr. Chairman, in the convert and charter concept. We have gone out to industry and they quickly responded to the strategy. Contract award is scheduled for May of this year.

The staff asked that I cover in my statement the question of charter versus buy, and very briefly, we are embarked on a charter program now. The studies that we conducted in the Navy show that over the life of the ships, using the present value of money concept, that charter can indeed be cheaper than buy, but costs vary depending on what rates you use, discount rates, inflation rates, interest rates, and so on. But with the tax benefits available to the shipowners, they can work up a program where even in a worst case the costs are sort of a wash.

The build and charter program is not really unique as far as the industry goes. Most of industry finances their merchant ship construction under this kind of concept.

In my own mind there is a more subtle underlying basis of why we prefer convert and charter, and it goes something like this. If we buy these ships, acquire them and operate them, we are in effect setting up a competing merchant marine capability. We are buying them away from industry. We are not using the expertise that is available in the maritime world. We are not using the benefit of the knowledge of those companies, the shipbuilders, and the maritime support personnel. We are not helping the industry at all.

Senator **Cohen**. What Admiral Carroll was saying before is that the way in which we are configured now, the industry itself does not seem to be integrating its shipbuilding plans with our military sealift needs. So at the present time why should we be concerned about setting up a competing system if they are not moving in that direction anyway?

Admiral **Cowhill**. Well Mr. Chairman, I think we can help the industry by utilizing their capability and experience, as opposed to the alternative of buying their assets away from them, allowing them to sell us their assets, get out of the business and we eventually end up where the U.S. Government, the U.S. Navy, is in the merchant marine business.

Quite frankly, we are not very expert at working the merchant ship problem. We have not done it well in the past, but there is a large, capable industry out there that can do it. In terms of alternate costs of charter vs. buy, in a brief time it is hard to get into all of the pros and cons, but to give you a feel for it, let's look at the TAKX ship for the Marines. The industry proposals have talked to either converting an existing ship or building a new one, which is about a $120 million investment. Do not hold me to the exact costs because they are in negotiation now and I do not know the exact figures, but it is in that ballpark. Industry is willing to charter this ship to us for something on the order of $16 to $18 million a year.

When we originally started to look at Navy doing it, using shipbuilding methods that we have used for combatant ships, the estimates were over $200 million for those ships. Obviously, when the outlay rate in the near years is considered, it is much less if we charter. In our 1983 budget we are asking for $40 million for this program, and that goes up to $125 million in the next year.

When we had a buy acquisition program, the cost in the first year was $450 million, going to $690 million the next year, which is a lot of up-front money.

So that is sort of in a thumbnail sketch of why we think convert and charter does make sense and why we can execute the program in the time that we need it.

Senator **Cohen**. Would you provide for the record your analysis between the "convert and charter" approach as opposed to the buy and convert?

Admiral **Cowhill**. Yes, sir.

[The information follows:]

Charter and Convert

The Navy still believes that chartering ships for the TAKX program is the most economical means of achieving the necessary lift capability in the required time frame. When the twenty to twenty-five year stream of charter payments are discounted and viewed in comparison to their present value, it makes good business sense. The Request for Proposal invited contractors to propose either the conversion and lease of existing ships or the construction and lease of new ships. All proposals will specify lease with an option to purchase at fair market value. Initial cost proposals received to date (best and final offers are due 30 April 1982) do not indicate that our earlier estimates of charter costs are unattainable. While I would prefer to be more specific and provide a side-by-side cost comparison of procurement versus charter, it is not possible until all proposals are evaluated. Our goal is a 31 May 1982 contract award. Until that time all cost proposals are proprietary in nature and cannot be used for comparison purposes.

Our review to date suggests that the convert and charter program approach for the TAKX will improve the chances for a successful program, because it broadens the number of potential candidates from existing U.S. flag ships to a much broader segment of the world-wide inventory. The many responses to the RFP provide a clear indication of feasibility. For once we are telling industry what it is we want done—and not how to do it. We are relying on the private sector for proposals that are imaginative both in terms of ship design and financial management. From the financial perspective, a charter program can be constructed which will have a lower present value than the purchase option. Thus, all the conditions necessary for a successful program are evident. Since the proposed acquisition strategy uses the traditional services of the U.S. flag maritime industry, it will serve to strengthen this important industry in consonance with this administration's policy objectives.

READY RESERVE FORCE

The fourth program I will quickly discuss is the Ready Reserve Force. That is our primary source and has been our traditional primary source of ships needed for early on in a contingency. These are the ships which are the most capable portion of the National Defense Reserve Fleet. They are ships that were traded in by industry. They are reasonably modern—15 to 20 years—and we get them for a very reasonable price. We overhaul them to get a 5- to 10-day readiness status and keep them in a ready to go condition, unmanned.

Our planning to date has called for the gradual increase in the number of ships so maintained in this Ready Reserve Force. We have 30 today. We are planning to move out to 44. But as we have looked at our plans, particularly in regard to the Rapid Deployment Force capability, this is an area where we have to increase the number of ships. So we are revising our plans to include more ships in the Ready Reserve Fleet.

SEALIFT ENHANCEMENT

The final program I would like to comment on is our sealift enhancement program, which includes a host of small acquisitions, the procurement of equipment for merchant ships that will enhance their capability to perform as a military auxiliary, and accessories that will correct the condition Admiral Carroll referred to in the case of say container ships, to make them more useful for our purposes.

The merchant marine uses these ships to ply the trades and they normally go between well developed ports, which have sophisticated handling gear. When these same ships are called on to serve in the military auxiliary role, they frequently require the addition of national defense enhancement features, such as improved communications and a better self-sustaining cargo-handling capability. Therefore, we plan to acquire sealift support equipment that will enhance their capability as a military auxiliary and will permit these ships to unload in underdeveloped or damaged ports, or over the beach, as necessary.

That concludes my statement, Mr. Chairman, I would be glad to answer any questions.

[The prepared statement of Admiral Cowhill follows:]

PREPARED STATEMENT OF VICE ADM. WILLIAM J. COWHILL, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)

Mr. Chairman, I am pleased to have the opportunity to appear before you and discuss our current sealift programs. Other witnesses, before this and other Congressional committees, have emphasized the importance of strategic mobility, the major part that sealift must play and the need for strong merchant marine programs capable of on-time delivery of the goods needed by our fighting forces. In any potential conflict, whether it might occur in Europe, the Mid-East or the Far East, we will depend upon sealift to deliver over 90 percent of the cargo required to equip and sustain our forces.

We have serious deficiencies in the sealift shipping that would be immediately available to rapidly transport our forces and equipment to a forward area and then sustain these forces in the first month or two of a contingency.

We have undertaken three major ship acquisition programs which complement each other and together provide a significant and achievable improvement in our sealift deficiencies. Two of these utilize the pre-positioning concept while the third utilizes the concept of a dedicated early surge force. I will describe each of these in turn.

The first is our Near Term Pre-positioning Force (NTPF) in support of the Rapid Deployment Force. The NTPF is comprised of the original seven Near Term Prepositioning Ships (NTPS) placed on station in July 1980 and six additional ships that were added in June 1981. Initially, the NTPS provided unit equipment and 15 days of supplies to support a Marine Brigade. In addition, some ammunition and fuel were pre-positioned for USAF tactical air and Army units. Subsequent to the establishment of the NTPS, a JCS initiative was generated to further improve our force posture in Southwest Asia. With funding provided in 1981, the six additional ships increased MAB supplies to 30 days plus more support for Army and Air Force units. The fiscal year 1983 budget request contains funding in the operation and maintenance appropriation for the continuation of this pre-positioned force.

A fourteenth ship will soon be added to the NTPF which will pre-position rapidly deployable medical facilities in support of the Marine Amphibious Brigade and provides a 1,000 bed field hospital capability.

Current experience with the force has been good. Operationally, ships are scheduled underway for about 10 days per month. This scheduling contributes to their improved operational readiness and security at Diego Garcia.

The maintenance program for embarked tactical equipment has been most successful. At this point, two cycles have been completed and a third is ongoing. Embarked tactical equipment has been totally offloaded, sampled and re-embarked with no major maintenance problems encountered. The results of the first two cycles showed overall material condition of major items to be excellent. Sampling indicated no adverse maintenance trends were in evidence and in addition, certain equipment modifications were performed.

The second sealift program, a follow-on to the NTPF, is the Maritime Pre-positioning Ship program, or MPS. The employment concept is essentially the same and provides pre-positioned support for three independently deployable Marine Brigades. It will eventually replace those ships of the NTPF now providing Marine pre-positioned support. Joint Service shipping for POL, ammo, and water, will not be replaced nor will individual support platforms for the other Services.

The cornerstone of the MPS Program is the TAKX, a ship specifically tailored to provide a full range of capability to maximize concept effectiveness. A key capability is the ability to spread load necessary equipment to reduce risk or loss as well as to facilitate selective offloading. The TAKX program was initiated in fiscal year 1982 and the fiscal year 1983 budget request contains funding for continuation of the program. It is the Navy's intent to pursue a convert and charter strategy for these ships since it appears that this is the best course of action to ensure having ships on station in the time prescribed. The MPS force configuration is to be composed of 12 to 15 self-sustaining, RO/RO vessels to support one MAB each in fiscal year 1984, fiscal year 1985 and fiscal year 1987. We are currently in the source selection process for these ships. Technical and management proposals are already being evaluated and cost proposals were just closed on 1 March. It is expected that contract award will be made by June 1.

I should add that we are relying heavily upon the private sector of the maritime industry for proposals that are imaginative both in terms of ship design and financial management. For once we are telling industry what it is that we want done, and not how to do it. I feel confident from review of the initial proposals that this approach will produce the desired results.

Turning now to our surge capability, the third sealift program involves the near term augmentation of the Ready Reserve Force by the acquisition of eight large, high speed containerships formerly called SL-7's, six of which have already been purchased and two additional ships which will be purchased this fiscal year. This program has as its mission the requirement to provide lift capacity for unit equipment, vehicles and rotary wing aircraft, to support a three Brigade Army Division. The equipment will be loaded aboard these ships for fast point-to-point sealift from the continental U.S. in support of worldwide operations.

As non-self-sustaining containerships, the SL-7s provide an immediate addition to our sealift capability "as-is", but are not fully suited or intended to transport unit equipment. Therefore, this program provides for partial RO/RO conversion to a cargo configuration specifically designed to facilitate rapid loading and unloading of military equipment. In the interim, the Maritime Administration has taken custody of the ships and is maintaining them in a ready reserve status for activation within five days. After conversion, these ships will be included in the MSC nucleus fleet in a reduced operational status and positioned at ports, near designated Army units, ready to load and go when a contingency requires. Four of the SL-7s will enter shipyards in late fiscal year 1982 for partial RO/RO conversion. The remaining four will receive limited modification until the funds requested in this budget submission for their conversion are authorized and appropriated. This program, when completed, will provide a major enhancement of our sealift assets. Conversion of all eight ships is essential in order to achieve the capability to rapidly deploy a mechanized Army division.

Another initiative in the area of enhancing our surge capability is the upgrading of the Ready Reserve Force. This source of ships, currently numbering 27 relatively modern, ready and self-sustaining cargo ships, provides the immediate access to dedicated sealift assets necessary to meet loadout time schedules and required delivery dates in the theater of operation. The source of ships for the RRF is normally from the operating U.S. merchant fleet and consists of ships still capable but no longer commercially competitive that are turned in by their owners. Five more ships are being upgraded during this fiscal year and funding for the maintenance of all 32 ships as well as funding for the upgrade of two more ships is contained in the fiscal year 1983 budget submission. This will bring the size of the RRF up to 34 ships.

Today there is an identified requirement for a total of sixty-one dry cargo and sixteen tankers in the Ready Reserve Force to meet Southwest Asia requirements for the Rapid Deployment Force. This represents an increase of 43 ships over and above that currently planned and requested up through this year's budget request. Until the recent demise of Construction Differential Subsidy funding, the initial acquisition of ships turned in by owners was accomplished with a portion of the Construction Differential Subsidy. In the absence of this subsidy, the Department is planning to pay for the acquisition of additional ships as they become available since additional RRF ships is the most economical and cost effective means by which we can assure adequate sealift to meet contingency surge requirements worldwide.

Finally, our fiscal year 1983 budget also supports the acquisition of the elements of the Sealift Support Programs. Contained herein are initiatives to correct shortfalls in our capability to discharge cargo, vehicles and POL either over-the-shore or through unimproved ports, to provide underway replenishment systems so that the organic Battle Group Mobile Logistic Support Force can be replenished at sea and to provide quick insert systems for containerships so that they can have the capability to carry large military vehicles and outsized breakbulk cargo.

In summary, the fiscal year 1983 budget, coupled with the previous years' authorizations, provides the necessary momentum for continued major improvements in both the sealift enhancement and mobility support program areas. Your continuing support in these vitally important logistic areas is solicited.

Senator COHEN. Thank you, Admiral.

Admiral Walters?

STATEMENT OF VICE ADM. R. L. WALTERS, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (SURFACE WARFARE), OFFICE OF THE CHIEF OF STAFF (P.P. & O.)

Admiral WALTERS. Good afternoon, Mr. Chairman.

You have heard from the sealift and the pre-positioning part of the overall effort to support forces overseas and I am going to talk about the Navy's support of the forcible entry capability. Fundamentally, this involves tactical air, amphibious lift, the CH-53 helicopters that the Navy buys for the Marine Corps, assault craft, antiarmor and stand-off weapons that are used for close air support, and finally, the general ordinances expended by ships.

LHD-1

The two areas that you probably have the most interest in are the LHD-1 and naval gunfire support. The LHD-1 is a new ship that we are proposing to full fund next year. We certainly appreciate the support of the Congress in giving us long lead last year, which we are utilizing for propulsion equipment, and we are requesting additional long lead this year for the combat systems elements that will go in that ship.

This is a unique concept in that it is a specific addition to our fleet from the standpoint of helicopter spots, troop-carrying capacity, cube for carrying cargo. Plus, it provides the convertible capability to be able to handle the Marine Corps AV-8B type aircraft. I am sure that we will be going into that in more detail in your questions today or perhaps tomorrow when Admiral McDonald and I will be back on the subject.

NAVAL GUNFIRE SUPPORT

The other area that I know you are interested in has to do with the support of troops ashore in terms of ordnance and specifically, naval gunfire support. I would have to say that our priorities have been on the tactical air aspect of that support and specifically, into air-delivered weapons and in improving the stand-off capability of our air-delivered weapons; and second, in developing antiarmor capability. We have programed additional R. & D. and procurement in the antiarmor type of weapons.

Two or three of specific application here are the laser Maverick, Hellfire for the helicopter, and the Gator mine which is used to channelize armor attacks.

As far as naval gunfire support is concerned, the number of gun barrels that we have in the fleet is increasing. We will be adding to the 5-inch capability as we bring new ships to the fleet. We are buying ammunition for and improvements to those gun mounts and tactical systems. Of course, most specifically is the addition of the 16-inch guns on the battleships, which will give us again a long range heavy firepower capability.

That concludes my oral statement. I have a prepared statement which I would like entered into the record.

[The prepared statement of Admiral Walters follows:]

PREPARED STATEMENT OF VICE ADM. ROBERT L. WALTERS, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS FOR SURFACE WARFARE

Mr. Chairman and members of the committee, I am Vice Admiral Robert L. Walters, USN the Deputy Chief of Naval operations for Surface Warfare and the Amphibious Forces Sponsor.

I am pleased to have the opportunity today to present to you the Amphibious Forces portion of this hearing.

Amphibious Warfare is a unique capability which captures the synergism of the combined forces of the Navy and Marine Caorps. Amphibious operations in combat represent one of the strong hertitages of the Marine Corps, and the Navy is proud to be a part of the vital concept of forcible entry. General Barrow has already addressed you on our overall capability and I will attempt to provide you with some details which will give you a better view of specific Navy programs which support our Amphibious Warfare mission.

In developing our plans to expand the Navy in seeking to reestablish maritime superiority, we quickly concluded that we must increase our amphibious lift capability and correct known deficiencies in those equipments and systems which support amphibious operations. Our initiatives are far ranging and designed to achieve a balanced increase in tactical air, amphibious lift, CH-53E helicopters, assault craft, sealift, pre-positioning, anti-armor munitions, standoff weapons, cargo handling and off-loading equipment and general increases in ordnance and supplies.

You are aware of our Near Term Prepositioned Force ships which have been in or near Diego Garcia for over a year. There are now thirteen ships in this force which contains equipment, supplies and ordnance to support a Marine Amphibious Brigade for 30 days of combat. The upgrading of this capability with additional, more capable ships to ultimately support three Marine Amphibious Brigades is continuing with funds already provided by the Congress, and we expect to meet the objectives established for these forces by the Secretary of Defense. Vice Admiral Cowhill is here today to provide you with the latest programs in the vital areas of sealift and pre-positioned forces.

As I have stated, the Navy/Marine Corps team has initiated efforts to achieve a balanced increase in several areas of Amphibious Warfare capability. Tactical Air is one of these elements and Vice Admiral McDonald will discuss TACAIR with you tomorrow.

Amphibious Left plays a key role in the objective of achieving a "600 ship Navy". Our current lift capability, considering ship non-availability due to major maintenance (Regular and Complex overhauls) translates to an ability to lift the assault echelon of one notional Marine Amphibious Force [MAF(AE)]. The Navy has structured its Amphibious Ship programs to achieve this size lift since the mid 1970s. The composition of such a force is shown at Table 1.

USMC MAF amphibious lift—1976 requirements

Troops	34,126
Vehicle (square feet × 1,000)	758
Cargo (cubic feet) × 1,000	1,357
Helos (ch-46 equiv.)	352

Our current goal is now the simultaneous lift of a MAF(AE) and an independent Marine Amphibious Brigade (MAB) with the Navy Support Elements which accompany them. The addition of a MAB to our lift goal in early 1981 represents a significant increase in our amphibious lift requirement and equates to sufficient ships to lift the forces shown in table 2.

NOTIONAL AMF (AE) + MAB LIFT REQUIREMENTS—OCTOBER 1981

	Troops	Vehicle[1]	Cargo[2]	Helos[3]
USMC MAF(AE)	32,562	723.3	1,859.0	484
Required NSE	3,241	56.3	195.3	30
Total MAF(AE)	35,803	779.6	2,054.3	514
USMC MAB	15,568	424.7	1,544.3	200
Required NSE	2,351	68.5	206.2	15
Total MAB	17,919	493.2	1,705.5	215
Total requirement	53,722	1,277.8	3,804.8	729

[1] Square feet times 1,000.

[2] Cubic feet times 1,000.

[3] CH-46 equiv.

Because these requirements have undergone considerable change over the years as new capabilities are introduced by the Marine Corps, we have current lift shortfalls, the most significant of which are in helicopter spots and cargo cube capacity.

Therefore, our new amphibious ships are being designed to replace existing ships on a better than one-for-one ratio. In the fiscal year 1981 appropriation, Congress approved the first of the LSD-41 Class and followed with the second of the class in fiscal year 1982. This year the Navy is requesting $417 million for the third ship of the class. This request includes $37.8 million in advance procurement for the fiscal year 1984 ship. The current five year SCN plan for the LSD-41 is:

Fiscal year:	
1981	LSD-41
1982	LSD-42
1983	1
1984	1
1985	2
1986	2
1987	2

The $3.3 million RDT&E funds will be used in the LSD 41 Land Based Test Facility to conduct developmental and operational testing to ensure a fully integrated propulsion control system is installed. It will also establish operational and logistics parameters, procedures and general maintenance criteria for the medium speed diesel propulsion system. $0.5 million in ship design monies will be used to review and update ship specifications and study possible improvements to the basic design. The LSD 41 provides an increased capability to lift, operate and support existing and future assault craft such as the Landing Craft Air Cusion (LCAC). It has double the cargo capacity of the LSD 28 and will carry up to 122 more combat trooops. The LSD 41's keel was laid in August 1981 and she is scheduled for delivery to the Navy in late 1984.

The trend to more capable ships is reflected in our selection of the LHD 1 Class ship which is a modification of our largest existing class, the LHA. In fiscal year 1982 the Congress appropriated $45.0 million for advance procurement of major machinery components for the LHD 1. This year we are requesting an additional $55.0 million in advance procurement for long lead time combat systems equipment with full funding of the lead ship in fiscal year 1984; a year earlier than previously planned. $15.035 million in RDT&E monies are reequested in fiscal year 1983 to enable us to update the existing LHA class Land Based Test Facility in order to accomodate the LHD 1 combat systems equipment tests and evaluations. R. & D. funding will also enable us to continue the LHD 1 design and systems integration effort. The two LHD 1 Class ships requested in the Navy's 5-year plan (one in fiscal year 1984, one in fiscal year 1987) will provide a significant increase in amphibious lift capability. a derivative of the existing LHA 1 Amphibious Assault Ship, the LHD 1 will be modified to incorporate the latest LHA upgrades and designed for a primary mission of amphibious warfare. The basic LHA basic hull form and engineering plant will be retained. Design changes from the LHA will emphasize increased capability to carry three LCACs and facilities for Air Intermediate Maintenance (AIMD) to support a detachment of eight to ten AV-8B vertical/short take-off and landing aircraft. In addition to her primary mission of amphibious assault the LHD will be capable of a convertible, secondary mission of force projection and sea control. Built into the ship will be the capability to expand the aviation support facilities by embarking specialized vans when the ship is to be used in her secondary mission. Such augmentation will allow the LHD to support a minimum of twenty AV-8Bs and six SH-60B helicopters.

Even though our 5-year program includes ten new ships and long lead for the first of another new class, the LPDX, we will still have to examine the feasibility of Service Life Extension Programs (SLEPs) for the existing LPD 4 and LPH 2 Classes of ships and perhaps selectively extend some of the LSD 28 Class for a few years. We have a good start toward meeting our goal of a MAF(AE) plus an independent MAB lift but, as seen in Table 3, we have a substantial block obsolescence problem in the mid 1990s which, with our increased lift objective will require a sustained higher level of new construction of amphibious ships over the next 10 years. By sustaining a balanced construction program coupled with a careful SLEP program we can avoid severe block obsolesence problems in the future. It is only fair to state that congress has been most supportive for additional LSD 41s in past years and in accelerating the lead shp of the LHD 1 Class by appropriating long lead funds in the 1982 budget.

AMPHIBIOUS SHIP BLOCK OBSOLESCENCE

CLASS	CURRENT INVENTORY	FISCAL YEAR														
		83	84	85	86	87	88	89	90	91	92	93	94	95	96	97
RETIREMENTS																
LHA-1	5															
LPD-1 *	3													-1	-1	
LPD-4 *	12													-2	-1	-2
LPH-2	7												-1	-1	-1	-1
LKA-113	5															
LSD-28	8		-1		-1	-1			-5							
LSD-36	5															
LST-1179	20															
LCC-19	2															

* Ship totals include USS LA SALLE (AGF-3), COMMIDEASTFOR Flag Ship and USS CORONADO (AGF-11).temporary relief for USS LA SALLE during LA SALLE's overhaul periods.

The Marine Corps CH-53E is an intergral part of the lift capability of an amphibious force. This helicopter, with its ability to lift heavy loads of up to 32,000 pounds, is vital to the rapid ship to shore movement of Marine Corps troops, equipment and supplies. We presently have 17 CH-53Es in the Marine Corps inventory. A total of 61 CH-53Es have been authorized through fiscal year 1982. Our current procurement objective is a total of 160 aircraft, including 103 to support three Marine Corps squadrons. The Marine Corps has stated an ultimate objective of six squadrons, however, which would require 168 Marine Corps CH-53Es and a correspondingly larger total procurement objective. 64 are requested in the 5-year Defense Plan at a unit cost of $19.6 million (in fiscal year 1983 dollars).

In addition to helicopters, waterborne assault craft are part of the Navy/Marine plan for forcible entry. Last year Congress approved the intitial procurement of the Landing Craft Air Cushion (LCAC) which is a revolutionary improvement in the seaborne movement of assault forces up to and across the beach. The importance of these craft in improving our tactical choices against hostile shores cannot be over emphasized. The LCAC provides a four-fold increase in beach areas which will be accessible to our amphibious assault forces. Its speed of over 40 knots and range of operation permit discharging amphibious ship to remain out of sight of the objective area, facilitates rapid movement to the objective area and allows dispersal of discharged cargo ashore. We are requesting three additional LCAC in the fiscal year 1983 budget and have included a total of 45 in our 5-year plan.

The neutralization of hostile forces opposing an amphibious landing is the objective of ongoing R. & D. and procurement. The Hellfire missile now in R. & D. provides an increased standoff capability for the Marine Corps AH-1 helicopter as well as a considerably improved kill potential over present anti-tank guided missiles. $9.8 million is requested in the fiscal year 1983 budget to continue the Hellfire R. & D. and purchase 30 of these missiles for testing. Laser Maverick is a short range Laser guided air-to-surface missile for close air support and battlefield interdiction. $33.1 million is requested in fiscal year 1983 for the initial procurement of 90 missiles. This is the only weapon under development that satisfies the longstanding Marine requirement for a standoff guided missile for use by Tacair in close air support. Its large, 300 pound, warhead and terminal Laser guidance give the ground commander the ability to positively identify and destroy a broad spectrum of heavy targets; from heavy armor to fortified bunkers.

Additional anti-armor capability will be provided by the Gator (GBU-78) air scatterable land mine weapon. Gator is the only near term weapon that provides the capability to canalize or slow attacking enemy armor that is beyoned the range of artillery. RDT&E monies provided in fiscal years 1981 and 1982 enabled completion of development of Gator and operational evaluation of the system. It is anticipated the Gator will achieve Approval for Service Use this year to be followed by a request for procuement funding in fiscal year 1984. Gator's fast mine field emplacement and setable self-destruct times will greatly aid the ground commander in fast changing tactical situations.

To improve our cargo handling and equipment offloading capability the Navy is continuing to procure pontoon causeway components needed to construct replacement causeways which are used to offload LSTs at the beach. (Pontoon causeways have a nominal five-year life cycle.) $2.316 million in RDT&E funding is requested for the Amphibious Offshore Bulk Fuel System to provide for continued support of development of the large, explosive propellant imbedded anchor necessary to establish a single point moor for the large tankers which must be utilizd to provide the fuel suppies of the Follow-on Echelon forces. This funding also provides for the development of improved pipe systems needed to move fuel from the offshore terminal to the beach.

In conculding my remarks, the following viewgraphs show the specific amphibious ships requested in the fiscal year 1983 budget.

LANDING SHIP DOCK LSD-41

	FY 1982	FY 1983
NUMBER OF SHIPS	1	1
COST	$344.8M	$379.2M
LESS ADVANCE PROCUREMENT FROM PRIOR YEARS	-$47.0M	-
PLUS ADVANCE PROCUREMENT FOR FUTURE YEARS	-	$37.8M
NET FUNDING REQUIREMENT	$297.8M	$417.0M

AMPHIBIOUS ASSAULT SHIP
LHD-1

	FY 1982	FY 1983
NUMBER OF SHIPS	0	0
COST	-	-
LESS ADVANCE PROCUREMENT FROM PRIOR YEARS	-	-
PLUS ADVANCE PROCUREMENT FOR FUTURE YEARS	$45.0M	$55.0M
NET FUNDING REQUIREMENT	**$45.0M**	**$55.0M**

Mr. Chairman, this concludes my presentation of the Amphibious Forces. I am delighted to have had the opportunity to appear before your committee and I stand ready for your questions.

Thank you very much.

Senator COHEN. General Miller?

STATEMENT OF LT. GEN. J. H. MILLER, U.S. MARINE CORPS, DEPUTY CHIEF OF STAFF (P.P. & O.)

General MILLER. Thank you, Mr. Chairman. It is a pleasure to address your Subcommittee on Seapower and Force Projection. As you know, seapower and force projection is the name of the game as far as the Marines are concerned, and the the Marines have the fundamental mission of providing landing forces for service with the fleet. As such, we provide tailored forces which are flexible, mobile, capable, and above all, ready.

My prepared statement addresses a number of topics, including ground weapons, air weapons, naval gunfire, sustainability and a number of others. I would like to concentrate my remarks, however, on the items which you indicated in your opening remarks.

All of the initiatives that we have, though, in the 1983 program are designed specifically to maintain or to enhance our capability for amphibious operations. The first item, however, is the requirement to get there. This has been addressed briefly by Admiral Walters as concerns amphibious lift, and also by Admiral Carroll as concerns the strategic sealift.

The simple fact is that there is just a shortage of strategic lift available. The Department of the Navy has recognized this as it relates to the amphibious lift, and the Secretary of the Navy has set a goal of obtaining the capability to lift the assault echelon of a Marine amphibious force, plus a Marine amphibious brigade employed independently.

The current inventory, of course, will not support this. The attainment of this is a long-term proposition, and that is further threatened to a degree by the fact that our current fleet will reach the end of its service life during the remaining years of this century.

LHD PROGRAM

The two programs which we are most concerned with at the present time or most interested in are the one that Admiral Walters mentioned, the LHD, which will be a helicopter carrier and will also carry the landing craft air cushion, and will greatly enhance the ship-to-shore movement as it relates to the utilization of helicopters, as well as the surface movement. This will be a ship that will eventually replace the current LPH's, but we hope that this program continues, so that not only would we be able to replace those ships in the 1990's as they are phased out, but it also will be able to grow with the force, to move toward or meet this requirement for the capability to transport the assault echelon of a Marine amphibious force, plus the MAB.

LSD-41

The other ship program that we are very interested in is the LSD-41. We need to continue that program. The first ship is currently under construction authorized in 1981, the second one in 1982, and one in the program before you now. These will replace the first of the ships to reach the end of their service life, the LSD-28.

Again, we would like to see that program continued, not only to replace those LSD-28's, but to provide some margin of increased lift capability as we move toward that goal which I mentioned.

Naturally, we marines would like to see this expedited, but we understand that there are requirements, and there is money, and there are priorities.

What we need to do, though, is to continue to work on the program. I think that the goal that has been set by the Secretary of the Navy is achievable, and I do not believe that we can accept anything less.

NAVAL GUNFIRE

With regard to naval gunfire, Admiral Walters mentioned this. All the Marine commanders, and I would say, also naval commanders because Navy officers are in charge of amphibious operations, not Marines, we all understand the necessity of having all-weather fire support when we undertake an amphibious operation. Naval gunfire is essential to that.

The simple fact is that over the years, naval gunfire has diminshed in the number of guns, range, and in lethality. We need some improvements. Range, lethality, and accuracy.

SAL-GP

Senator **Cohen**. What is your feeling about the SAL-GP?

General **Miller**. It is good. It provides the increased accuracy, of course. It is still, to a degree, deficient in range.

Senator **Cohen**. As compared to what?

General **Miller**. As compared to a larger caliber round such as those which have now disappeared from the fleet, like an 8-inch or a larger caliber. We are very much encouraged by the reintroduction of the *Iowa* class battleship. That will restore some of the major guns to the fleet and, of course, provide greatly increased fire support for the Marines ashore.

Senator **Cohen**. I gather from your testimony you are somewhat lukewarm on the SAL-GP?

General **Miller**. Not at all. It is an advance we have supported. It will, of course, provide the capability of first-round hits, and kills.

Senator **Cohen**. Have the tests proved that it is a rather remarkably accurate weapon?

General **Miller**. They have proven very successful. The OP-EVAL was very successfully accomplished, the targets being designated both from a ground laser designator and from an airborne laser designator in an OV-10.

Senator **Cohen**. Hitting moving targets?

General **Miller**. Hitting moving targets.

Senator **Cohen**. At a range of about 10 miles?

General **Miller**. Yes, sir. I am very high on that. I just point out that it still has a limitation with regard to range, primarily.

LIGHT ARMORED VEHICLE

Moving on into the area of the ground mobility and fire support, while we have a number of programs, I would concentrate my remarks with regard to the light armored vehicle.

This is a program which was designed to enhance the mobility and the firepower of our ground units. It is a joint program undertaken with the Army. We are buying an off-the-shelf vehicle. As you know, we currently have four candidates which are undergoing tests out at 29 Palms and other areas in the Western part of the United States. These tests are progressing satisfactorily. In fact, just this morning each of the four candidates which we are testing was lifted by the CH-53 Echo helicopter, and all successfully.

Senator **Cohen**. Have there been any changes made in that so-called off-the-shelf requirement that would prevent you from proceeding along those lines?

General **Miller**. None at this time and none that I foresee. In other words, we have been meeting all of our milestones and objectives to date.

Senator **Cohen**. What about the cost? My understanding was that the Marine Corps was going to get 72 light armored vehicles for a cost of $36.2 million, and the current estimate is you are going to get 60 instead of 72.

General **Miller**. Yes, sir, and the issue with cost is that I guess the 72 was more of a guesstimate, and I am not sure what it is. I do not know how anybody could determine what the cost is at the present time when we have not selected the vehicle.

There are four different candidates, and we have not gotten back the information with regard to a production contract, have not selected a vehicle yet, have not gotten back the production information on any of the vehicles. So it is very difficult to come down with a firm cost at the present time.

Senator **Cohen**. What you are saying is that when you make such a request, it is just a guess that you are going to get 72 vehicles at such and such a price?

General **Miller**. Yes, sir. It was an educated guess.

Senator **Cohen**. There were no other factors, such as modifications in the previous estimate as to what will be needed? In other words, the same design requirements that were submitted have not been changed so as to increase the cost of those vehicles?

General **Miller**. I think that any changes in the design that we have made to the vehicles, we anticipated making in the very beginning. It is our intention to keep those changes to the off-the-shelf vehicle to the very minimum.

It was the intent of this program that we would take the off-the-shelf vehicles, make those minimal changes that would be necessary to give us an operational capability and get it in the field and get it with the troops, and as we used it, then it is possible that we would want to go back and do some product improvement and retrofit with more capable weapons systems, for instance, as we go downstream.

Senator **Cohen**. General, could you supply for the record the specifications for the light armored vehicle that was in existence when the original concept was presented to the Congress, what changes have been made or requested?

It seems to me that at least some of the members of this committee want to explore whether or not we were given one projection for 72 vehicles for *x* amount of dollars and then there was some slight modification which you say was envisioned from the very beginning.

We would at least like to have the opportunity to examine what extent those changes or modifications have contributed to a cost growth such that we would have 12 less vehicles.

General **Miller**. Yes, sir, I will provide that, and also an explanation of the cost growth between the 72 and the 60.

[The information follows:]

LAV Specifications

At the inception of the LAV Program, in March of 1980, we testified that the introduction of light armored vehicles would enhance the tactical firepower and mobility of our ground combat forces. In this regard we identified the following four general requirements for the LAV to fulfill: (1) provide a broad base of weapons systems to enhance our fire support, (2) be transportable by the CH-53E helicopter, (3) provide the maximum level of protection within the weight constraints, and (4) provide a high degree of mobility and agility on roads and cross-country operations. With these four basic requirements a survey of the existing market of LAVs was conducted. The results of the survey indicated that in order to reduce the potential competitors to a manageable number more definition of our requirements was required. A Required Operational Capability (ROC) was developed which set forth a list of specifications which were largely based upon what had been found to exist in "off-the-shelf" vehicles as a result of the market survey. This initial ROC specified the following fundamental requirements:

Mobility—Minimum top speed of 50 mph and an operating range of 400 miles.

Agility—Acceleration of 0-20 mph in 10 seconds and braking from 20-0 mph in 35 feet.

Armament—(1) a variant mounting a gun with the capability of the M242, 25mm chain gun, (2) a variant capable of penetrating 300mm RHA at 2000 meters.

Crew Size—All variants would have a driver and a commander with a gunner required on gun variants; one variant would carry an additional six combat equipped Marines; other variants would carry additional personnel as appropriate to the mission.

Protection—Capable of stopping 7.62mm ball ammo and 152mm air bursts at 50 feet.

RAM-D—.90 confidence of completing 200 mile mission; .85 operationally ready; less than 1.3 hours mean time to repair at organizational level; and 2000 miles between overhaul.

It was these specifications and the market survey estimate of their cost that provided the basis for our original estimate of 72 vehicles to be purchased with the fiscal year 1982 funds.

Subsequent to that estimate more definitive costing was developed based primarily upon the detailed information from the seven contractors who responded to our initial Request for Proposals (RFP). As a result of this new estimate it was projected that only 60 LAVs could be purchased with the fiscal year 1982 funds.

Throughout the process of defining the number of LAVs available with the fiscal year 1982 funds the specifications have remained constant. The initial ROC was revised in December 1981 primarily to amplify on the capabilities of the other mission variants needed to complete the family of LAVs for the Light Armored Assault Battalion. There has been no significant changes to the fundamental requirements that were in the initial ROC.

COST GROWTH ESCALATION

Senator **Cohen**. One problem we have constantly is that it is charged that we come in with a projected cost for a specific system, or vehicle in this case, and then over a period of time changes are made which contribute to the escalation of costs, and we come up with something several years down the line that is more costly, with fewer systems or fewer vehicles.

We have the situation where we are getting a much smaller quantity for a much larger cost. Then there is pressure on us to say, what in the world are we doing with our cost overruns? Why was this not anticipated? Why are these changes being made? Is it the Marine Corps, is it the Army, is it the Navy making the changes? Is Congress doing it?

What accounts for this escalation and cost growth? I think that is an issue that Senator Byrd and others and all on the committee have been confronted with; why in the world these things tend to escalate in the out-years, and why do you get something much less than what you originally thought you were buying.

General **Miller**. We understand that. We will provide that for the record.

I would like to say that the program with the Army has worked out very satisfactorily from our standpoint. As I mentioned earlier, we are making the milestones. We have a good working arrangement, and I do not see any problems between us at this time.

We intend to acquire a sufficient number of these vehicles to provide a light armored assault battalion for each of our Marine infantry divisions, and we anticipate the first company being available in late 1983.

Sir, that generally completes my comments on the items in which you had indicated an interest.

[The prepared statement of General Miller follows:]

Prepared Statement of Lt. Gen. John H. Miller, U.S. Marine Corps

Mr. Chairman, distinguished members of the committee: I welcome this opportunity to share with you today my views on Seapower and force projection. Seapower, the control of the seas when and where we choose through presence and force projection, is, and will continue to be, the key element of this nation's military strategy. Maritime superiority through the exercise of Seapower is vital to our Nation's prosperity, our defense, and the maintenance of our allies. This Nation has many alliances and interests far distant from our shores; we must be assured of free and unthreatened access to the sea lines of communication. While free access may not be at issue today, the Soviet Union and her proxies threaten that access and are rapidly developing increased capabilities to do so. We must counter by reacquiring clear maritime superiority, and by the decisive application of Seapower, when and where required.

Beyond the maintenance of free access through sea lines of communication, naval forces in the exercise of Seapower provide this nation a credible deterrent capability and, should deterrence fail, a potent, flexible, and responsive offensive capability.

Amphibious forces, the Navy/Marine Corps team, are instruments of diplomacy and deterrence, as well as offensive power projection. A global maritime strategy requires balanced naval forces. These forces must be capable of influencing both the regime of the sea, and of extending that influence ashore for both offensive and defensive purposes. Inherent mobility and sustainability permit amphibious forces to concentrate the requisite combat power at the times and places required and then, upon completion of the task, to move on and apply that power elsewhere. A balanced naval strategy provides not only the formidable air power projection capabilities represented in carrier air groups, but also the ground/air projection capabilities which are integral to the amphibious task force.

Naval amphibious task forces represent this nation's most viable forcible entry capability. Our forces can seize and control strategic choke points and entry points, as well as establish advanced bases. As a device of strategic distraction, amphibious task forces constitute a significant force multiplier which, by virtue of their presence alone, can divert or constrain major enemy resources.

In employing amphibious task forces, theater commanders have at their disposal a flexible and powerful combined-arms capability which can either operate independently or integrate their capabillities with other Services and allied forces for joint/combined endeavors. I am confident you recognize that such global reach and fleibility can take maximum advantage of Soviet vulnerabilities, and provide maximum assurance to our allies and protection of our worldwide interests.

These then, are the tactical and strategic advantages associated with amphibious task forces in the application of Seapower and through the execution of amphibious warfare.

The Marine Corps' fundamental mission is amphibious warfare. To accomplish that mission with maximum flexibility and capability, we provide Fleet Marine Forces of combined-arms, along with integral supporting air components, which serve as landing forces with the various numbered Fleets. We support those Fleets by exercising our capabilities to seize and defend advanced naval bases, and by conducting land operations necessary to the successful prosecution of a naval campaign. Marine forces supporting the Fleets are organized so as to be mission capable; that is, they are task organized. Task organization of forces is a basic tenet of amphibious warfare and permits us to "tailor" our forces for a specific mission, or mission area, and to organize and equip those forces so they are prepared to respond to the anticipated threat. By so doing, we provide hard-hitting, flexible, and mobile forces which can respond rapidly with a great deal of capability, and do so economically. In short, Marine Air-Ground Task Forces (MAGTFs) provide significant capability for a comparatively low rate of investment. However, in order to maintain our unique capabilities, an investment is required and, to that end, I will outline just what that investment will produce.

In order to provide as vivid a picture of our requirements as possible, I will discuss our major programs, as well as Navy programs of special interest, in the context of the amphibious assault. Forcible entry from the sea is our most unique contribution to the nation's defense and is integral to MAGTF capabilities. The initiatives we are proposing are designed to foster and enhance that capability and to maintain our traditional high state of readiness.

The amphibious assault has five distinct phases: beginning with the planning phase and continuing through embarkation, the rehearsal, movement to the objective, and culminating with the assault. While the primary focus of my remarks will be directed toward the assault and subsequent operations ashore, it is not my intention to minimize the importance of the other four phases. To the contrary, our ability to execute is totally dependent on our ability to get there. Getting there is, in turn, dependent upon the availability of sufficient amphibious shipping and that is what I would direct your attention to first.

As in recent years, the sealift capacity necessary to get our Marines to where they might be needed falls short of the strategic requirement. Recognizing that a shortfall exists, the Department of the Navy has established a firm goal: to acquire sufficient amphibious shipping to transport, simultaneously, the Assault Echelon (AE) of a Marine Amphibious Force (MAF) and a Marine Amphibious Brigade (MAB). Attainment of this goal will permit us to execute major amphibious operations, simultaneously, in two separate areas of the world.

The current inventory of amphibious ships, contained in both the active and reserve fleets, falls far short of the MAF(AE) plus MAB requirement. Considering that some ships are non-available due to overhaul, only enough ships to lift one MAF(AE) are available for immediate embarkation—and these are divided between the Pacific and Atlantic fleets, and some are forward deployed at all times. The attainment of our stated lift objective is, at best, a long range proposition—and it is further threatened by the approaching block obsolescence of the current amphibious inventory.

Subsequent to the LHA Class amphibious assault ships being included in the last decade's shipbuilding plan, no new amphibious ships were planned for over a decade. This near vacuum, in the wake of an active shipbuilding schedule in the 1960's, has created a situation wherein a significant number of amphibious ships currently in the active fleet will reach the end of thier projected service lives in a relatively short period. Between 1984 and 2002—a period of 19 years—55 amphibious ships will reach retirement age. Thirty-four of those ships will reach the end of service life between 1999 and 2002 alone. Thus our concern with "block obsolescence." An increase in the projected construction of new amphibious ships is obviously required, if only to replace those currently in service.

As a result, the Marine Corps maintains interest in two current shipbuilding programs: LSD-41 Class amphibious ships, for which the first keel (USS *Whidbey Island*) was laid last August; and LHD-1, a conceptual amphibious assault ship.

LSD-41, the first amphibious ship to be started in 5 years and the first to be funded in ten years, is designed to carry Landing Craft Air Cushion (LCAC), as well as conventional landing craft. It represents a commitment to new technology at low risk. We need more of these ships to replace the aging well-deck ships. The LHD-1, a general purpose amphibious assault ship, is also needed to replace our aging LPH-2 Class helicopter assault ships and to increase our total lift capacity, provide a flight deck for both helicopters and VSTOL aircraft, and offer a well-deck for both air cushion and conventional landing craft. In concept and design, it is similar to the current LHA Class ships and will benefit from much of the same technology. To help alleviate amphibious lift shortfall, LHD-1 must enter the fleet as soon as is reasonably possible.

Turning now to the assault phase, I'll begin by discussing the very critical period that precedes the landing of the landing force. During that period, it is essential that we initiate the process that will lead to gaining relative combat superiority over the defenders. Prior to landing Marines in the assault waves, the only fire support means available are naval gunfire and aircraft—they are both critically important—and the integration of their capabilities is vital to our success during the early stages of the assault.

Naval gunfire provides readily available, all-weather, direct and indirect fire support, and is the primary means of that support before artillery and tanks are established ashore. Currently, our naval guns are deficient in size and number. Moreover, there are no new guns or gunfire-related programs in development or production.

Our current naval gunfire capability rests solely on five-inch guns with conventional ammunition. This capability is adequate for soft targets within range, but these weapons possess limited range and lethality. It is imperative then, that our naval gunfire be sufficient to provide efficient and effective support to the landing force. We are most interested in any programs that will provide increased support in this vital, and deficient, area.

The reactivation of the *Iowa* class battleships will be a major improvement in the area of Naval Gunfire support as major caliber guns are reintroduced to the fleet. At a cost significantly lower than new construction for a lesser ship, the USS *New Jersey* will provide massive firepower capability. I strongly support the reactivation of the remaining three *Iowa* class battleships.

Aviation initiatives directly related to gaining and maintaining relative combat superiority, as well as air superiority, rest in theAV-8B and F/A-18 programs.

As in past years, the AV-8B Harrier program continues to be the key element in the Marine Corps' modernization of its light-attack force. The AV-8B program is proceeding on schedule. Since last year's hearing, four Full-Scale Development (FSD) aircraft have been built. The first AV-8B FSD model flew on November 5,

1981. That flight and subsequent flights have been highly successful. The planned Initial Operational Capability (IOC) of 1985 is on schedule. With the procurement of 18 AV-8Bs requested in fiscal year 1983, we will take another positive step toward our goal of an all VSTOL light-attack force.

The F/A-18 will clearly provide Marine Aviation significantly enhanced combat superiority, both as an interceptor and as an attack aircraft, over the F-4 that it replaces. Reports from pilots and maintenance personnel not only herald the F/A-18 as a first-rate fighting machine but also indicate that the aircraft is equaling or exceeding all reliability and maintainability specifications.

During the movement from ship to shore, whether in the helicopterborne or surface assault echelons, we require maximum use of supporting arms—and maximum speed and efficiency in execution. Having discussed the supporting arms aspects, I'll turn now to those programs designed to enhance the manner in which we execute the assault.

The Navy's LCAC program represents a breakthrough in ship-to-shore movement. The keen interest the Marine Corps has in this program intensifies as the program continues to develop. The LCAC's capabilities are well known: speed up to fifty knots, sixty ton (or better) payload, extensive operating ranges, accessibility to 70 percent of the world's littorals, and both across-the-beach and inland capability. The Congress has strongly supported this important program. We exspect the introduction of this revolutionary craft by 1986.

In order to further reduce our vulnerability during the critical ship to shore movement and improve our mobility on the battlefield, we have initiated a program to upgrade our assault amphibious vehicles (LVT-7); a program that will prove effective and economical. The LVT-7A1 will have a new engine and other improved subsystems and components. The program has two aspects. The primary aspect involves the Service Life Extension Program (SLEP) of the entire inventory of 984 LVT-7s which are to undergo product improvements to meet LVT-7A1 specifications. The second aspect provides for new production of 329 vehicles in the LVT-7A1 configuration, which will be used to support the Maritime Pre-positioning Ships (MPS) program and to meet our Table of Equipment and Pre-positioned War Reserve Stock deficiencies.

To enhance the execution during the helicopterborne assault and to improve our maneuverability during subsequent operations ashore, our aviation community is pursuing a number of modernization initiatives. An important modernization program is the replacement of our medium helicopter force of CH-46 and CH-53A/D aircraft. Solutions to our assault vertical lift problems must be undertaken without further delay. The Marine Corps is pursuing this solution through two approaches. First, we are participating in a joint Service program designed to produce an advanced vertical-lift aircraft, designated JVX, by the early 1990s. A variation of that aircraft has the potential of becoming the Marine Corps' medium-assault transport. Second, we are planning for the procurement of off-the-shelf helicopters as a means of providing an interim remedy to our medium-lift shortfall until an advanced vertical-lift aircraft becomes a reality.

Another new helicopter which is already proving its worth in the Fleet Marine Force is the CH-53E Super Stallion. Our first CH-53E squadron, HMH-464, is now operating from MCAS(H) New River, North Carolina, with its full complement of 15 aircraft. Our second CH-53E squadron was activated in December 1981 at MCAS(H) Tustin, California, and received its first aircraft in February 1982. By all accounts, the CH-53E is a bonafide operational success. Reports from HMH-464 pilots indicate that the performance of the CH-53E is exceeding our original expectations. Since receiving its first aircraft in June 1981, the squadron has routinely lifted 14.5 ton practice loads and supported our Marine ground units at Camp Lejeune, North Carolina in a variety of operations. Additionally, the squadron will be participating in operational tests of several Light Armored Vehicle (LAV) candidates this spring at the Marine Corps Air Ground Combat Center at 29 Palms, California. The 11 CH-53Es requested in fiscal year 1983 will be used to assist in outfitting our third CH-53E squadron which we plan to establish in fiscal year 1985. These first three squadrons will minimally meet our current heavy-lift requirements for the ship-to-shore movement. With the introduction of the LAV (14.5 tons) into the Fleet Marine Force, total heavy lift requirements for the ship-to-shore movement and subsequent operations ashore will more than double the number of CH-53E squadrons required.

Having established our assault elements ashore, it is then necessary to secure our positions on the beaches and in the helicopter landing zones, and to commence expanding those positions subsequent to the thrust for deeper objectives. The most critical threat to our ability to successfully maintain and expand that initial toehold is enemy armor actions. Realizing that, and in appreciation of the magnitude of the

Soviet and their proxies' armor/mechanized capabilities, we are sponsoring certain programs to increase our firepower which are designed specifically to defeat those capabilities. Included among those programs are: the MK-19 40mm Machine Gun; additional Tube-launched, Optically-tracked Wire-guided missiles (TOW); additional Dragon missiles; the M198 155mm howitzer; the Copperhead Precision-guided Projectile (PGP); the Modular Universal Laser Equipment (Mule); and two aviation ordnance programs.

The MK-19 is a recoil operated, fully automatic, grenade launcher designed to fire a 40mm projectile in excess of 2100 meters. This weapon will be employed by infantry units to engage light-armored vehicles and personnel. Twelve weapons will be placed in each infantry battalion for a total of 108 weapons in each Marine Division.

Tow and Dragon inventories will also be increased. Our plans are to double the numbers of TOWs and to increase our Dragon capability by 25 percent within each Marine Division. The Tow initiatives, in addition to increasing the number of weapons, call for beefing-up the warhead, extending its range, providing it with electrical-optical countermeasures systems, and providing night sights for acquiring and destroying targets in the dark. Dragon will also be provided with night sights.

Further, and in keeping with our doctrine of totally integrating our combined-arms effort, our artillery units will be strengthened by programs designed to enhance their effectiveness in general and, in particular, their anti-armor/mechanized capabilities. Introduction of the M198 155mm howitzer as our primary direct-support artillery weapon will significantly increase the lethality, range, and accuracy of our artillery units. Accuracy and lethality will be further improved by combining Copperhead Precision-guided Projectiles with the Modular Universal Laser Equipment. These, in addition to the aviation delivered, anti-armor ordnance programs we are pursuing, will measurably enhance our anti-armor/mechanized capabilities.

Air-delivered, Precision-guided Munitions (PGMs) are an area we are giving a great deal of emphasis because of its combat value to ground forces. The significance of the Soviet tank threat requires air-delivered PGMs which can successfully engage enemy armor at standoff distances. We believe Hellfire and Laser Maverick are two such PGMs which can defeat the threat without unacceptable aircraft attrition.

Hellfire is being procured for eventual use by our attack helicopter force. Our pilots will be able to fire the laser-guided Hellfire at a tank which has been laser-designated by the ground commander, and then break away before entering the tank's anti-aircraft killing zone. Our AH-1/Hellfire IOC of fiscal year 1986 will provide the ground commander with additional tank-killing punch.

On the fixed-wing side of Marine Aviation, Laser Maverick promises to offer the same degree of aircraft surviability to our AV-8B, F/A-18, and A-4M aircraft that Hellfire will provide attack helicopters. It also offers tremendous target lethality with its unique 300 pound warhead, the largest on any U.S. anti-tank PGM. By providing the fixed-wing community with an anti-tank weapon which, again, the ground commander can control by laser designation, Laser Maverick furnishes additional safety for our friendly forces and the enhancement of close air support to Marines on the ground. With operational testing commencing in March 1982, Laser Maverick's planned IOC of fiscal year 1985 appears to be achievable.

A second, and equally critical, threat to our successful establishment of Marines ashore is the enemy's air attack capabilities. The steady expansion of Soviet attack capabilities, illustrated by weapons systems like the Hind-D and MIG-27, demands improved air defense protection for our front-line Marines as well as our vital rear area installations. These requirements are being addressed as quickly and as economically as possible through the acquisition of Ihawk Triad equipment and Stinger missiles.

We are expanding our surface-to-air missile capabilities by adding a third firing section to each of our Ihawk batteries in fiscal year 1983. This will increase each battery's simultaneous engagement capability from two to three targets. We will add an additional Triad battery (three firing sections) to each of our Light Anti-Aircraft Missile (LAAM) battalions in fiscal year 1984. In addition to this Ihawk Triad equipment enhancement, we are acquiring increased numbers of Ihawk missiles to improve the sustainability of our LAAM battalions. The Hawk Missile System will be with us well into the 1990's; thus, we believe that these Ihawk initiatives represent prudent and economical improvements.

Moreover, in fiscal year 1982, we are increasing our Forward Area Air Defense (FAAD) platoons from one to four platoons per aircraft wing. In fiscal year 1984, we will add a fifth platoon to each wing. These platoons will be receiving the Stinger missile, an effective replacement for the current Redeye missile. As a matter of fact, our Third Marine Aircraft Wing at MCAS El Toro, California has just recently completed outfitting one of their FAAD platoons with the Stinger missile. This first fully operational Stinger unit has been assigned to the 7th Marine Amphibious Brigade.

In order to integrate these offensive and defensive systems into a cohesive, responsive, and lethal fire support team, we must possess the means by which to control and coordinate their diverse capabilities. MAGTFs are organized, equipped, and trained to operate in a totally integrated combined arms structure, thus providing our commanders the capacity to control all elements of the team including ground combat, aviation, and logistics. To that end, unique command, control, communications, and intelligence (C^3I) capabilities are required. The following programs for C^3I systems will satisfy that requirement.

The Position Location Reporting System (PLRS), a fiscal year 1982 conferee funding deferral, is designed to provide commanders and equipped units with instantaneous friendly position and identification information. If funded in 1983, this joint Army-Marine Corps development could be in production with initial units scheduled for delivery to tactical forces in 1984. PLRS will interface with the Marine Integrated Fire and Air Support system, a real-time processing system which will be available in fiscal year 1987 to provide commanders selective automated assistance for accomplishing command, control, and coordination functions inherent to the employment of all fire support weapons of the MAGTF.

Our Tactical Air Operations Center-85 is a modular, state-of-the-art, air-control system that will replace current equipment which is approaching obsolescence. Its IOC of 1985 ensures that the Marine Corps will have a modern, deployable air-control capability for the battlefield of the 80s and beyond.

To match the air-control capabilities of TAOC-85, we are procuring the AN/TPS-59 Radar to provide a long-range, three-dimensional air-defense surveillance radar. Because of its superior ECM capabilities, improved reliability and maintainability, and overall unsurpassed performance, the TPS-59 is recognized as the world's finest air-defense radar. The 10 radar sets requested in fiscal year 1983 will initially be used with our present air-control units and ultimately with TAOC-85 when that system is fielded.

Once we have solidified our positions on the beaches and in the landing zones, we are prepared to move inland in order to seize control of landing force objectives and consolidate the force beachhead. On the modern battlefield such a thrust requires a high degree of mobility. Tactical mobility provides the means to rapidly close with and destroy the enemy, and to logistically support Marines in a highly mobile environment. There are two ground acquisition programs intended to improve our battlefield mobility in addition to those programs relative to LVT-7A1 which I have previously discussed. These are: a new family of light armored vehicles, and the High Mobility Multi-purpose Wheeled Vehicle (HMMWV).

The Light Armored Vehicle (LAV) program is designed to increase both the mobility and firepower of the Marine division. Our acquisition efforts are directed toward the testing, evaluation and, ultimately, the selection of an "off-the-shelf" vehicle which will be modified to provide multipurpose service. Based on a common chassis, the LAV will have variants which will be integrated and organized into Light Armored Assault Battalions (LAABs). These battalions will not only provide combat support to other elements of the MAGTG but, when required by the situation, may be employed as hard-hitting, fast-moving, helicopter transportable (if required) maneuver elements. This provides a new dimension to our capability to engage and destroy highly mobile adversaries. The first LAV company will be formed at the Marine Corps Air Ground Combat Center, 29 Palms, California, in calendar year 1983.

The High Mobility Multipurpose Wheeled Vehicle is a new multi-functional vehicle which will streamline maintenance, training, and logistic support. Functionally, it will serve as a weapons platform, a communications vehicle, and a multipurpose logistics carrier. Perhaps most significant are the cost efficiencies offered by this new family of vehicles. HMMWV will replace eight types of motor transport vehicles currently in the inventory and, by doing so, will virtually halve that inventory (26,000 current vehicles will be replaced by 14,000 HMMWVs)—and that, while increasing our lift capacity.

Finally, during the fight to consolidate the force beachhead and those subsequent operations ashore necessary to the accomplishment of a given mission, we must be capable of sustaining our Marines. Once deployed, they must be capable to remain and fight. Sustainability, in combination with weapon systems and people, is a necessary ingredient of force capability.

In order to correct combat service support deficiencies, we have activated previously cadred combat service support companies. The result will be that all Force Service Support Groups (FSSGs) will be capable of providing support in all functional areas by the end of fiscal year 1983. This sequence will include activation in the areas of rations, supply, landing support operations, fuel storage and distribution, bridging, and engineer support—all of which are vital to sustainability.

The activation of units in all functional areas within each FSSG provides a fully capable combat service support structure that must then be manned by marines suitable for assignment to the FSSGs. Current manpower projections provide for progress in satisfying FSSG manpower requirements from the current 77 percent of requirement to 87 percent by 1987. This increase in the manning levels of the FSSG structure will provide a substantial increase in the depth of capability within all critical functional areas. Additionally, funding in the past year, and in the current budget, provides substantial ammunition and materiel increases.

Perhaps the most innovative sustainability initiatives we are sponsoring are those associated with pre-positioning. Pre-positioning of supplies and equipment enhances both our sustainability and strategic mobility. Marine Corps prepositioning programs include afloat and land pre-positioning. Afloat programs are the Maritime Pre-positioning Ships (MPS) program, and the Near Term Pre-positioned Ships (NTPS) program. Land pre-positioning is planned for Norway. Although pre-positioning offers the dual capability of rapid response and rapid reinforcement, its utility is limited by the requirement to introduce forces for linkup with pre-positioned materiel in a non-hostile or permissive environment.

Each of the three sets of MPS MAB equipment will be embarked in four to five specially designed ships which will have roll-on/roll-off, breakbulk and tanker capabilities; limited on-board maintenance facilities; and pierside or limited over-the-shore offload capabilities. The equipment in each set of ships will support a Marine Amphibious Brigade.

The NTPS is a near-term strategic mobility enhancement initiative currently deployed in the Indian Ocean. It consists of seven ships currently deployed in support of the RDJTF: three roll-on/roll-off; two breadbulk; and two tankers, one for water and one POL. The 7th MAB, organized to deploy in conjunction with assets aboard the NTPS, is task organized to provide extensive ground tactical mobility amd firepower complemented by its integral aviation combat element. However, no aircraft are pre-positioned. Aircraft self-deploy or are deployed by strategic airlift. The NTPS will be replaced by the third MPS flotilla by the end of fiscal year 1987.

This crisis response ability to rapidly combine forward deployed forces, pre-position/airlift configured forces, and MAGTFs on amphibious shipping is a significant capability for force projection.

Finally, an area of continuing special interest to the Marine Corps is the Fleet Hospital program, which provides definitive/care medical facilities in all major medical specialties. It is designed to provide full range of medical services, within or near the combat zone, for direct support of Navy Fleet units and Fleet Marine Forces. These large, self-contained, portable units will give emergency life-saving care and serve to help in addressing the serious shortfalls in Navy medical support. I urgently support this vital Navy program.

In conclusion Mr. Chairman, I would like to reiterate my views on maritime superiority and the role of the Navy/Marine Corps team in implementing the maritime superiority, through the exercise of seapower, is vital to our Nation's prosperity, our defense, and the maintenance of international stability.

The maritime imperatives extend across the entire spectrum of our national institutions: military, economic, commercial, and diplomatic. As a nation with alliances and commercial/economic interests far distant from our shores, we must be assured of free and unthreatened access to the sea lines of communication. Beyond the maintenance of free access through the lines of communication, our naval forces must be able to provide this nation with a credible deterrent capability and, should deterrence fail, with a potent, flexible, and responsive force projection capability.

The Navy/Marine Corps team stands ready today, as in the past, to provide these capabilities. The programs I have detailed for you today are designed to maintain and enhance our capabilities for force projection through the remainder of this decade and beyond. Given the traditional support of the Congress, for which the Marine Corps is most appreciative, we will continue to provide this nation those unique capabilities which are the hallmark of our Corps and which have established our position as an integral and essential element of the national maritime strategy.

That concludes my statement. I am prepared to entertain your questions.

Senator COHEN. Thank you.

General Pihl?

STATEMENT OF BRIG. GEN. DONALD S. PIHL, DEPUTY DIRECTOR OF WEAPONS SYSTEMS, OFFICE, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND ACQUISITION, DEPARTMENT OF THE ARMY

General PIHL. Thank you, Mr. Chairman. It is a pleasure to be here before your committee today to discuss the Army's program for the light armored vehicle. To paraphrase my opening statement, I would like to make three points on our joint program.

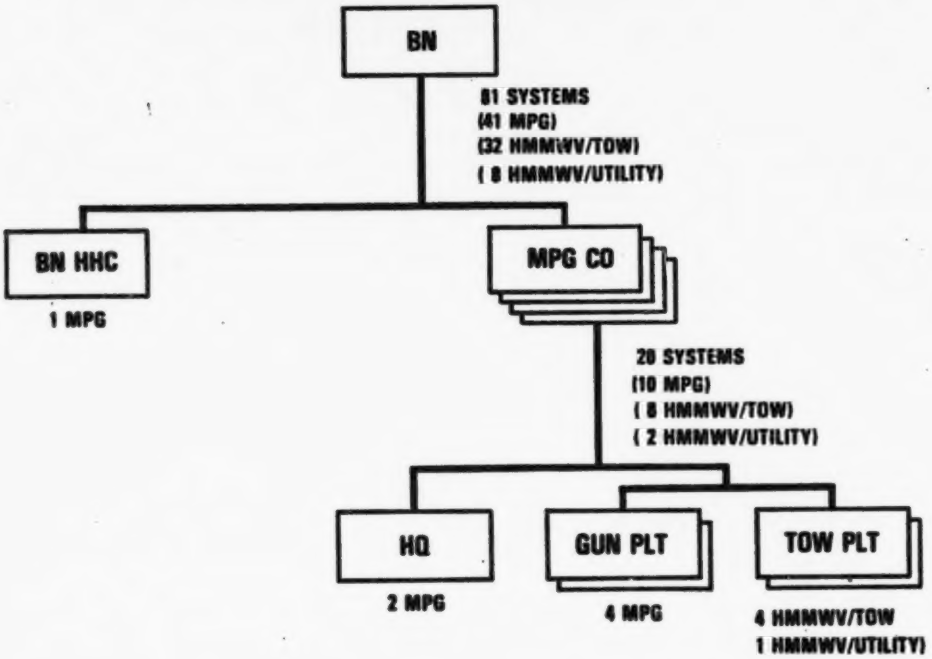
ARMY FORCE STRUCTURE

[Present—1986 timeframe]

	Active	Reserve
Armored divisions	4	2
Mechanized divisions	7	1
Airborne division (82d Division)	1	0
Infantry divisions (7th ID, 9th ID, 25th ID)	3	5
Air assault division (101st Division)	1	0
Total	16	8

First of all, we need this program for the light divisions within our force structure. Shown on this chart is the 24-division force in the Army. I would point out to you on the active side we have five light divisions—the 82d Airborne, the 7th Infantry, the 9th Infantry, the 25th Infantry, and the 101st Air Assault Division—that we would like to equip with this capability.

MOBILE PROTECTED GUN (MPG)
NEAR-TERM ORGANIZATION



To show you how that translates within the division, I would like to show a chart of the battalion that would employ this capability. Shown here is the mobile protected gun battalion of the light division. Two of these battalions would go into each of the four infantry divisions I mentioned, and one would go into the 82nd Airborne Division. That would be two battalions of 41 vehicles each, and the spare as necessary to sustain those divisions in combat.

This vehicle will enhance our near-term capability to strategically deploy Army forces throughout the world and then provide tactical mobility once they get on the ground.

These two battalions would also have, as shown, the high mobility multipurpose wheeled vehicle, HMMWV, with the TOW missile as the tank-killing component of the force. So we would have a 25-millimeter Bushmaster that would be the same vehicle that the Marines are adopting. In that sense, we have one program.

Our program in the next 5-year period, calls for procurement of 680 mobile protected gun vehicles. That is the same vehicle the Marines use in the assault role. We have restructured the program as of February 2 of this year. I believe your supporting data shows three types of vehicles for the Army.

At this point in time, the only thing we hope to buy in 1983 is the mobile protected gun. And for the $111.3 million we show in the budget, our projection at this time, once again an estimate, is that we would buy 175 of these mobile protected guns.

The decisions on the squad carriers and the recovery versions of the vehicle are yet to be made. The decisions will be made this summer after the 9th Infantry Division, which is the unit that receives these vehicles first, complete their evaluation at Fort Lewis, Wash.

So at this point in time we are sure that we have a common program on the mobile protected gun with the U.S. Marine Corps, and after an evaluation process we will take a look at the squad carrier and recovery versions of these vehicles.

Sir, that completes my remarks, subject to your questions.

[The prepared statement of General Pihl follows:]

PREPARED STATEMENT BY BRIG. GEN. DONALD S. PIHL, USA, DEPUTY DIRECTOR OF WEAPONS SYSTEMS OFFICE, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND ACQUISITION, DEPARTMENT OF THE ARMY

Mr. Chairman, Gentlemen: It is a pleasure to appear before you today to outline the Army's program for light armored vehicles. I will discuss the Army's future plans for the structure of light divisions, the acknowledged materiel deficiencies in equipping the light forces and current Army plans for correcting those deficiencies as related to light armored vehicles.

ARMY FORCE STRUCTURE
(PRESENT - 1986 TIMEFRAME)

	ACTIVE	RESERVE
ARMORED DIVISIONS	4	2
MECHANIZED DIVISIONS	7	1
AIRBORNE DIVISION (82D DIV)	1	0
INFANTRY DIVISIONS (7TH ID, 9TH ID, 25TH ID)	3	5
AIR ASSAULT DIVISION (101ST DIV)	1	0
TOTALS	16	8

The Army currently has a 24 division force. Because the size of our Army is constrained, and the contingencies for which we must be prepared are varied, the Army must be sufficiently flexible to respond to various threats. These threats encompass both NATO and non-NATO environments. We believe that a flexible response dictates a mixture of heavy and light forces. Within the current Army force structure there are five (5) designated light divisions. As shown on this slide, those divisions are the 82d ABN, 7th ID, 9th ID, 25th ID and the 101st Air Assault Division.

The Army is planning to change its light divisions. The light division 86 study was used to conceptualize new Army requirements. We are currently conducting an empirical analysis. To provide that analysis, the Army has designated the 9th Infantry Division as the Army's High Technology Test Bed Division. The 9th ID Commander, Major General Elton, in concert with the Army's Training and Doctrine Command (TRADOC) and the DA Materiel Development and Readiness Command (DARCOM) is specifically charged to:

ARMY HIGH TECHNOLOGY TEST BED (HTTB) DIVISION—MISSION OBJECTIVE

Using the standard infantry division as a base, and the emerging results of our light division 86 study effort as a guide, activities at Fort Lewis will evolve a light division designed for rapid development, sustainability, and exploitation of Technology opportunities, to yield a lean hard hitting force. The objective is to develop through innovation and technology, a division approaching the combat capability of a heay division, while retaining the airlift requirements and sustainability inherent to light divisions.

[Extract from fiscal year 1982 Army posture statement.]

Compare and validate various division organizational structures.

Investigate various equipment mixes.

Explore the infusion of high technology.

Test and evaluate operational concepts.

The test being conducted within the division relate to the Rapid Deployment Force and various equipment options—lightly armored vehicles being only one such option. The test plan covers a broad spectrum of objectives to include analyses of command and control, intelligence production, battlefield surveillance, target acquisition, and electronic warfare. The Army's objectives for the high technology test bed program are to field a prototype High Technology Light Divison (HTLD) in fiscal year 1985 and incrementally transition the other light divisions to the HTLD configuration. HTTB testing began in May 1981 and will continue through fiscal year 1988.

MISSION ELEMENT NEED

Prior to completion of tests in the HTTB, the Army readily acknowledges that our light divisions and other selected units are deficient in weapons systems that provide for:

Rapid strategic deployment.

High tactical mobility.

Reasonable survivability.

Assault capability on the integrated battlefield.

The Marine Corps acknowledges similar deficiencies for its light forces. In view of potential world crisis, both the Army and the Marine Corps agree that we must correct these deficiencies on an urgent basis. The Department of Defense acknowledges our needs and has approved Mission Element Need Statements (MENS) for both Services. Those MENS serve as the basis for the joint Light Armored Vehicle Program that we are currently and successfully executing.

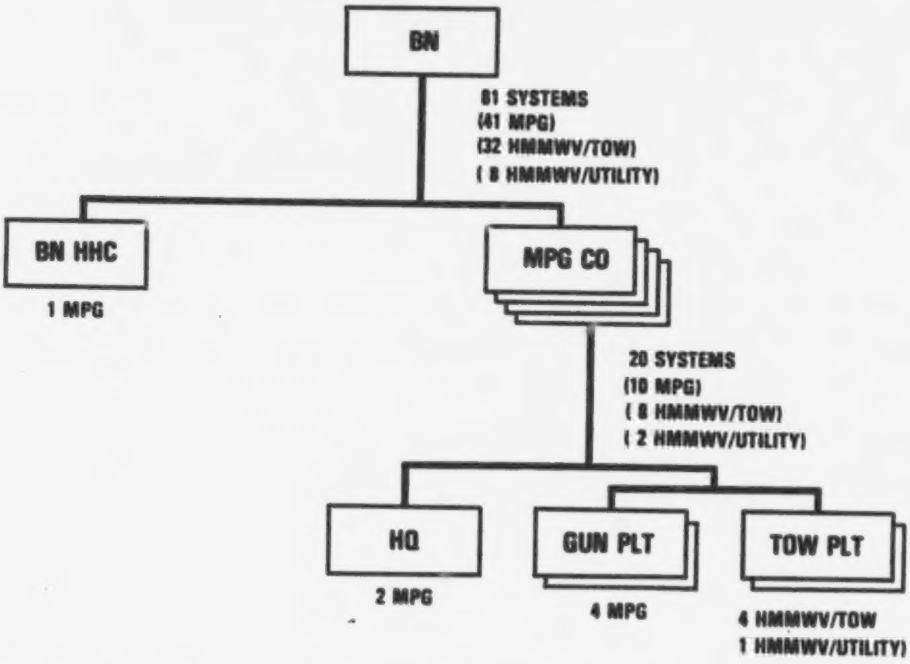
PROGRAM EXECUTION

The Army has acquisition responsibility for the LAV program in compliance with Department of Defense and Congressional guidance. The Program Manager is a Marine Corps officer, Colonel Joseph O' Brien. The Army has provided an Assistant Program Manager, a contracting officer, experienced engineer and procurement personnel and offices at the Tank-Automotive Command Headquarters in Warren, Michigan. The testing of candidate vehicles is a joint effort. The Army has provided personnel from the Operational Test and Evaluation Agency (OTEA) and Army crewmen to work with Marines at 29 Palms, California and Yuma Proving Grounds, Arizona. The LAV program requires the competitive selection and procurement of an "essentially" off-the-shelf armored combat vehicle. The competitive testing of tour (4) candidate LAV's began on November 1, 1981, is proceeding well and is on schedule. Tests will be completed on May 31, 1982. And we will jointly select a winning contractor based on test results and contractor responses to the LAV Production Request For Proposal which was released on December 1, 1981. The Army is dedicated to the successful completion of this program and we are confident that it can fulfill the stated urgent requirements of both Services.

ARMY REQUIREMENTS

At this point I would like to address Army requirements for Light Armored Vehicles. As I have already testified, the Army is relying on the 9th ID to help determine requirements for specific equipments. However, in advance of their completed analysis and because the requirement is urgent, the Army has identified the need for a lightweight, assault capable, armored combat vehicle. The LAV program is currently testing several candidate vehicles with a two-man turret and the BUSHMASTER cannon that have the potential for fulfilling this requirement in the near term. It is currently proposed that the Light Divisions be organized with two Mobile Protected Gun Battalions each. A type MPG battalion is as shown on this slide.

MOBILE PROTECTED GUN (MPG) NEAR-TERM ORGANIZATION



You will note that each battalion will contain 41 Mobile Protected Gun systems. Also shown are 32 High Mobility Multipurpose Wheeled Vehicles with the TOW missile. The HMMWV with TOW comprises the second half of the Army's MPG solution. TOW will give the light divisions a viable capability against threat main battle tanks. For this hearing I am concentrating primarily on what the Army plans to procure from the LAV Program.

The Army's total procurement of MPG's is 680 systems over a four year period. The total buy will equip four Army divisions and include sufficient systems for maintenance floats, war reserve, training base and two POMCUS sets one each for the 7th ID and 25th ID.

OTHER LAV VARIANTS

The Army also acknowledges a need for other light armored vehicles for the light divisions. Last year Major General Maloney testified before the HASC that the Army had a potential requirement for 1,500 Light Armored Squad Carriers (LASC). The Army still anticipates procuring LASC's in order to give mobility to several of the eight (8) infantry battalions in each light division. The quantity required may still be approximately 1,500. However, before the Army makes a decision on the specific vehicle to fulfill the squad carrier requirement we must allow the High Technology Test Bed to explore operational and organizational concept testing for using such vehicles. Their input to the decision making process is critical. We will also give further consideration to the use of systems or variants of systems already in the Army inventory. The established maintenance and logistics base demands a review of fielded systems as to their potential for filling the LASC role. This will be done.

The merits of fielding a family of vehicles has always been recognized by the Army. In this regard, we are keeping our options open to select a LASC variant from the current LAV program.

The Army will consider the various options available and make a decision on other variants to include a recovery vehicle variant in June of this year. We realize that the decision point is critical because a winning contractor from the LAV competition will be selected by July 1982. We anticipate award of a multiyear, fixed-price production contract after a Marine Corps Systems Acquisition Review (MSARC) and an Army production decision program review.

My last slide shows the Army's procurement program for light armored vehicles.

U.S. ARMY'S LIGHT ARMORED VEHICLE PROGRAM

(PROCUREMENT $ MILLIONS)

ITEM	FY 1982 QTY/$	FY 1983 QTY/$	FY 1984 QTY/$	FY 1985 QTY/$	FY 1986 QTY/$	FY 1987 QTY/$	FY 1988 QTY/$	TOTAL QTY/$
LASC			173/$85.3	173/$62.8	299/$112.5	520/$204.3	287/$118.8	1452/$583.8
MPG-II		175/$111.3	200/$138.0	240/$154.0	65/$44.8	0	0	680/$448.1
LARV			51/$18.6	35/$12.3	44/$16.1	53/$20.2	0	183/$67.2
TOTAL ARMY		175/$111.3	424/$218.9	448/$232.0	408/$172.8	573/$224.5	287/$118.8	2315/$1078.3

Our fiscal year 1983 budget request is for $111.3 million to procure 175 Mobile Protected Gun Systems (with 25 mm Bushmaster cannon). We plan to procure 680 systems over a four (4) year period at a total cost of $448.1 million. This is a change to the Army LAV data as reflected in the President's fiscal year 1983 budget. The dollar figure remains constant at $111.3 million. The Army has opted to procure only quantities of MPG systems to fully equip one Light Division (9th ID), provide a war reserve and procure systems for the training base. I have spoken briefly to other potential LAV variants for which the Army anticipates a need—a Light Armored Squad Carrier and a Light Armored Recovery vehicle. This chart projects the Army's quantitative and dollar requirements to procure those variants starting in fiscal year 1984. I must reemphasize the fact that the Army realizes that a multiyear procurement contract for July 1982 is pending. Therefore, an Army decision on the other variants will be made in June this year. The chart reflects those quantities of vehicles required to provide each light division (except the 82d ABN Div) with two MPG battalions, squad carriers for five (5) of its eight Infantry battalions and sufficient recovery vehicles to support the MPG's and squad carriers. Quantities also include maintenance floats, War Reserves, Pomcus sets (2) and training base support.

CONCLUSION

We are confident that the joint program is responsive to meeting the Army's urgent requirement for fielding a near term LAV system. We need the flexibility to pursue alternatives. The High Technology Division tests are critical in defining those alternatives.

LIGHT ARMORED VEHICLE

Senator COHEN. I take it that you say the Army has a very strong commitment to the light armored vehicle family of vehicles?

General PIHL. Yes, we do, sir. These vehicles provide a capability to our light divisions that are not there at this time, particularly as you look at C-130 deployability, once you get into the area of operations.

Senator COHEN. What about the light armored squad carrier?

General PIHL. Sir, we have kept our options open on the light armored squad carrier. That has to do with the organization and our high-technology light division at Fort Lewis, which is evaluating that concept.

In the June timeframe, as we are getting ready for the test results to be reviewed before they go to the Marine MSARC and the Army Acquisition Review Council (ASARC), we expect a decision will be made by our Chief of Staff as to what our squad carrying vehicle is going to be at that time.

Senator COHEN. What would you estimate the probability is that that will not be a variant of the LAV?

General PIHL. Sir, I cannot assess that at this point in time. The 9th Division's evaluation and what is going on at 29 Palms are two different views of that program at this time. The outcome will depend on the results we achieve from the test at 29 Palms and the results that the 9th Infantry Division comes up with. I think each will be evaluated on its own merits.

Senator COHEN. How many vehicles did you say you expect to purchase in the LAV family? Was it 680?

General PIHL. Sir, that is the number of the 25-millimeter Bushmaster gun vehicles for our gun battalions. The number of vehicles in the budget, as we have requested it, is a little over 2,300 vehicles. That presumes acceptance of a squad carrier and a recovery vehicle from the light armored vehicle program.

At this point in time that decision has not been made internally within the Army. So we are looking at a 2,300-vehicle program. That is what we are planning to buy. But at this point in time we are commited to 680 vehicles with the Bushmaster cannon. In our 1983 budget request we are only asking for the mobile protected gun.

LIGHT ARMORED SQUAD CARRIER

Senator COHEN. Let me go back to the light armored squad carrier. Give me your opinion, General, as to what the impact would be upon the unit cost of that carrier if it is not a variant of the LAV.

General PIHL. If I may first of all say, obviously, unit costs are competition sensitive at this time, and we have three contractors, as General Miller mentioned. There are a range of costs that relate to the program. The light armored squad carrier version is the baseline vehicle and is the least expensive of those vehicles. When you put various weapons systems on top of it, they approach the upper end of the scale as far as the cost figures shown in the program.

My answer to you is that if in fact the UH-60 helicopter deployability of the light division squad carrier is accepted by the Army, the cost of the lighter vehicle would be less. The 25-millimeter gun of the Army's three types of vehicles envisaged is the most expensive of the three, obviously.

Senator COHEN. Senator Byrd, do you have any questions?

SL-7 FAST SEALIFT SHIPS

Senator BYRD. Admiral Carroll, 2 years ago the Senate Armed Services Committee added procurement funds to purchase eight

SL-7 ships for the rapid deployment mission. In your written statement you mention a 12-ship augmentation fleet for the SL-7 fast sealift ships. Would you elaborate on this 12-ship fleet? What, if any, funds are requested in the fiscal year 1983 budget for these ships?

Admiral CARROLL. Yes, sir; 2 years ago, when we looked into purchasing the eight SL-7's—and these are magnificent ships, they are 33 knot, and at 33 knots they can deploy to Europe in 4 days, to Southwest Asia in 11 days. They can carry the unit equipment and the combat support and combat service support for a full armored or mechanized division.

At that time we were looking at a single armored or mechanized division. Today we are looking at the capability in the outyears in the 1985-86 timeframe to deploy two armored or mechanized divisions, of which the eight SL-7's will be the key.

Now, the armored or mechanized division equipment weighs about 100,000 tons. About 50,000 tons of that is really unit equipment, and about 50,000 tons is combat support and combat service support.

In our discussion with the Army we now have determined that we can use the eight SL-7's to lift the unit equipment of two armored or mechanized divisions. To bring in the combat support or combat service support, we will need about another 15 ships of the 20-knot variety. We are structuring the Ready Reserve Force [RRF] in the National Defense Reserve Fleet to give us a capability of bringing in the combat support and combat service support for the other two divisions.

That is the program I am referring to. Admiral Cowhill has addressed what we are trying to do in keeping up the RRF of the National Defense Reserve Fleet.

FUNDS FOR SL-7

Senator BYRD. What funds are in the fiscal year 1983 budget for this?

Admiral COWHILL. $20 million, Senator Byrd, for adding the number of ships in the RRF. Today we have 27. We are adding four more ships. We gradually are increasing that up to 44 ships. In the 1983 budget we are requesting $20 million in O. & M. funds for that purpose.

Senator BYRD. Admiral Carroll, what is the potential of the so-called surface effect ship to provide fast sealift in the future?

Admiral CARROLL. I will give you a personal opinion, and only a personal opinion. Surface effect ships, because of their high fuel consumption in the intertheater lift in deploying combat power from the United States to a theater such as Europe or Southwest Asia and with their very small payloads, is years down the line, in my opinion. In the near term, I feel they have a great capability in the intratheater role, such as Southwest Asia, if you went from the south side of the Persian Gulf to the north side of the gulf. In the very near timeframe with good technology, they would be excellent in that particular mode.

Senator BYRD. What would be the cost of those ships in comparison to more traditional vessels?

Admiral **Carroll**. I do not have the information on those costs.

Admiral **Walters**. They would be more expensive, but I could not estimate how much more.

Senator **Byrd**. In any case, it would be more expensive?

Admiral **Walters** Yes, sir. For a comparable payload, that type of ship would be more expensive than a conventional hull.

MARINE AMPHIBIOUS FORCE

Senator **Byrd**. Admiral Walters, is it correct that changes in the structure of the Marine amphibious force, primarily through the addition of more helicopters, will outpace the buildup of the amphibious fleet that is to transport the Marine amphibious force?

Admiral **Walters**. If I interpret the question correctly, the growth in capability of the Marine Corps will increase the lift requirement faster than we are building it?

Senator **Byrd**. Yes.

Admiral **Walters**. I think that is fair to say if you look at our 5-year plan right now we are faced with a twofold problem. One is trying to increase the lift for Marine Corps units. As General Miller noted we are going from a requirement to lift a Marine amphibious force, or MAF, to that plus a Marine amphibious brigade or MAB. At the same time, because of the increasing complexities of warfare, which affect the Marine Corps as it does the rest of us, there is also an increase in what we refer to as fingerprints, the cube, the square footage, the troops, the helicopter spots, and landing craft which we are required to carry Marine forces and equipment.

I think if I could show you two slides, one that shows that 1976 requirements, and then what it looks like today, that it will give you the order of magnitude of what I am talking about.

USMC MAF AMPHIBIOUS LIFT
1976 REQUIREMENTS

TROOPS	VEHICLE (SQ FT × 1000)	CARGO (CU FT × 1000)	HELOS (CH-46 EQUIV)
34,126	758	1,357	352

This shows the capability to lift a MAF in 1976, 34,000 troops square footage for the vehicles, cubic feet for cargo, and the helos. The ones you want to concentrate on primarily are the cargo—that is the cube—and helos, because those are the two which represent our latest shortfalls.

NOTIONAL MAF (AE) • MAB LIFT REQUIREMENTS
OCTOBER 1981

	TROOPS	VEHICLE (SQ FT x 1000)	CARGO (CU FT x 1000)	HELOS (CH-46 EQUIV)
USMC MAF (AE)	32,562	723.3	1,859.0	484
REQUIRED NSE	3,241	56.3	195.3	30
TOTAL MAF (AE)	35,803	779.6	2,054.3	514
USMC MAB	15,568	424.7	1,544.3	200
REQUIRED NSE	2,351	68.5	206.2	15
TOTAL MAB	17,919	493.2	1,750.5	215
TOTAL REQUIREMENT	53,722	1,277.8	3,804.8	729

The next slide shows what our requirement is now and it displays tremendous growth, the doubling of helicopter spots and almost a doubling of the cube. In my statement I mentioned that we must have a sustained building program for the next several years in amphibious ships in order to be able to achieve this objective.

Now, in order to improve our capability we are building ships that have more capability than the ships that they replace. In other words, we have more than a one-for-one replacement; specifically, the LSD-41 is more capable than the LSD-28 which it replaces. We are replacing, for example, 8 with 10. So we gain not only in numbers of ships that are being replaced but also in the capability.

The LHD, for example, is a modification of our largest amphib, so we gain helicopter spots and cube in that effort. But it is going to require a sustained program to do this.

Senator BYRD. Thank you.

General MILLER. May I have equal time, Mr. Chairman?

Senator COHEN. Certainly.

General MILLER. I do not quarrel with Admiral Walters in most of his statement, especially the last statement he made, and that is that we have to have a sustained program in order to achieve this objective.

I would point out, though, that the figures that he uses up here are somewhat misleading, because you are comparing apples and oranges. In the one case we are comparing the MAF-AE, and in the other case it was the MAF-AE with the naval support elements added.

MAF LIFT REQUIREMENTS

If you look at just the MAF alone, there is not that dramatic a growth. I would say that we are in the position that we are in now for two reasons. Not the biggest reason is the growth in the MAF lift requirements. It is the hole we dug for ourselves by not building any amphibious ships for over 10 years.

So we are trying to get out of the hole as well as to acquire some additional capability to satisfy a small amount of growth in the MAF lift fingerprint.

I will reiterate what I said in the beginning. I think that this is achievable. I think that it requires a sustained program, as Admiral Walters said. I think that we can work together with the Navy to achieve this. Not all of the MAF equipment represents growth.

There are a lot of very encouraging things on the horizon. The high-mobility multipurpose wheeled vehicle, for instance, which we are introducing, will replace eight different types of vehicles with one type. It will reduce the number of vehicles. It will reduce the square and cube. It will increase the load-carrying capacity of the vehicles themselves.

That is good from the standpoint of tactical mobility on the battlefield. It is good from the standpoint of strategic mobility in the ships.

The TAOC-85, which is our air control system, will replace the current system, which was introduced in the 1960's, and the requirement to move it to the battlefield is one-fourth of the old system. This is a plus with regards not only to operational enhancement but to strategic mobility.

There are a lot of pluses as well as minuses when you look at it from the standpoint of what is being changed within the MAF as far as lift requirements.

I guess I will just end by saying it is a solvable problem, and I think that we can do it. But it does require a sustained program, and the ships that we have in the current program, the LSD-41 and LHD-1, are keys to achieving that objective.

Senator **Byrd**. Let me ask Admiral Walters a question. Admiral, would there be any savings if LSD-1 were procured in 1983 rather than as currently planned in 1984?

Admiral **Walters**. Senator, there would be savings from the standpoint of pure escalation of payments. However, we are not ready to build that ship in 1983. That was originally a 1985 ship. We have accelerated to 1984, and we are simply caught up in the design process and we are going to get delivery of the ship as fast as we are physically capable.

Senator **Byrd**. Even if we were funded in 1983, you could not proceed with it?

Admiral **Walters**. That is right. We would not be able to proceed with it, because the design is not complete.

Senator **Byrd**. Thank you.

CONVERT AND CHARTER

Senator **Cohen**. Admiral Cowhill, I would like to come back to this "convert and charter" approach. Last year, as I recall, the Congress proceeded on the basis that we were going to buy those ships and then convert them for maritime pre-positioning purposes, and included the funds in the SCN account. This has met with the objection of the DOD. We are back again this year, apparently, in the O. & M. account looking for the "convert and charter."

Now, you have stated it is going to be cheaper, I believe, to do it this way. But in fact, what we are talking about is that you are going to have, I believe, the same or a larger amount of dollars spread out over a period of time, with the appearance of lower payments rather than being confronted with the initial up-front costs.

So essentially what we are doing is saying rather than going to the SCN account, we are going to put it in O. & M. and spread it out over a period of time.

What I am concerned about is what kind of analysis, what kind of assumptions were made with respect to discounting the cash flow during that period of time in future years? It is my suspicion it is going to cost us more money in the long run; perhaps we should put the money up front to do the job.

But the question I have is, does the Navy have the authority to charter ships for more than 5 years?

Admiral **Cowhill**. Mr. Chairman, let me tick off a couple of answers to that. First, we were authorized the appropriation in SCN, but it was appropriated in O. & M.N. So we had a disconnect that is now tied up in this question of what do you follow, the authorized or the appropriated.

Senator **Cohen**. You were told that if you went ahead with the appropriation and/or the authorization, there would be deep trouble next year?

Admiral **Cowhill**. That is right, and resolution of that argument is a little bit above my pay grade. As a result, we have not spent a nickel, even though we had $60 million appropriated to charter ships; it is indeed holding us up.

The Rapidly Deployable Medical Facility is ready to go. The Army has given us the hospital ready to ship it out to Diego Garcia, and we are caught up in this problem.

The decision was made, the strategy was made, to pursue the charter version, and, as I indicated before, studies were made. I do not have it at my fingertips, the discount rate and so forth. It ended up, of course, being a series of curves. It made a fairly persuasive case that under certain conditions it would be cheaper to charter and under other conditions it would be, as I indicated, sort of a wash.

Senator **Cohen**. But in any event, we are not going to be competing with the private sector. We are going to take those ships out of inventory in any event, are we not? Those are our ships, whether we are leasing them or own them.

Admiral **Cowhill**. Yes, sir.

Senator **Cohen**. We are not really competing. The notion that somehow if we bought them and converted them, this puts us in competition with the private sector does not really hold up. What we are saying is that they are going to be our ships for our use whether we are leasing them or buying them.

Admiral COWHILL. That is correct, sir. I did not mean to suggest otherwise. What you say is absolutely true. I was trying to make the point that by utilizing the maritime industry and having them work the problem for us, we are tending to strengthen those organizations as opposed to simply taking the ships off their hands and setting up our own organization to build, convert, construct, and operate the ships.

Senator COHEN. But they have not been doing it. They have not been integrating the merchant marine fleet so that it could be used for military purposes, as does the Soviet Union. In the briefings I have been receiving, it is a much different situation for the Soviet merchant marine.

Admiral COWHILL. That is right. We have a very modest national defense feature program associated with construction differential subsidies. Now that those are out the window, we have a problem of how that is to occur. All I can do is provide you—I have forgotten what your last question was.

Senator COHEN. Whether you could lease in excess of 5 years.

Admiral COWHILL. We think we can. MSC has executed programs of build and charter, essentially, in the past for sealift tankers, which end up being—Admiral Carroll can talk to it with greater competence than I can—5-year charters with options to pick them up on a recurring 5-year basis. As to the legality of it, as long as the corpus in the Navy's industrial fund is sufficient to cover the total it is a legal method of doing business.

There has always been an issue with the Congress, of course, of: Do you approve programs that have a potential longer obligation than 5 years? That is the issue that you are addressing, of course.

Senator COHEN. I assume that in any lease arrangement the owner is going to factor in costs in that lease on a yearly basis to take into account future inflation. So those initial costs are going to be significantly higher. If Congress in that 5-year period did not want to lease those, we have lost a lot of money.

Admiral COWHILL. Yes, there would be a penalty clause at the end that you would have to pick up, essentially the cost of the ship at that time if you do not renew the charter.

HOSPITAL SHIPS

Senator COHEN. Now, last year the DOD proposed converting the SS *United States* into a hospital ship in support of the RDF; and the current program includes one TAKX in fiscal year 1983 for $300 million and one in fiscal year 1984 for $260 million to convert two unspecified hulls.

The question I have is, What hulls are being considered for conversion to hospital ships?

Admiral COWHILL. The request for proposal to industry went out in September 1981, and they have responded. There were, I believe the number is something like 11 responses, a whole different host and combination of ships proposed to provide this capability.

The capability, the total capability we envision is either 2 or 3 ships to provide the 24 operating rooms and 2,000 beds.

Senator **Cohen**. How did you come to that figure, by the way, of 2,000 beds and 24 operating rooms?

Admiral **Cowhill**. It was originally—it is part of the total medical care requirement, and, you know, the number really generated from an optimistic assessment capability of the SS *United States*.

Senator **Cohen**. Let me clarify it. It is my understanding that each service has to have its own in-theater medical service units. Do these ships envision taking care of Army, Air Force or just Marine and Navy?

Admiral **Cowhill**. They are primarily to take care of the Marine-Navy requirement. Obviously, in a real wartime situation, all services pool assets and take care of all the people. But we are responsible for funding and programing for the Marine, primarily Marine, casualty rates, the postulated Marine casualty rates for the size of their forces.

Senator **Cohen**. Why did you not have this hospital ship in the convert-and-charter program?

Admiral **Cowhill**. Well, the primary reason was it was militarily unique, it was more unique than a standard merchant ship, like these MPS ships are, that it would require so many unique military things, it would have no commercial utilization whatsoever under any circumstances. Therefore, it is unlike the standard merchant convert-and-charter programs we have done in the past. It was a decision made by the Secretary of Defense that he would not support a convert-and-charter program in the case of the hospital ship, that we had to fully fund it as a specially unique military-only type ship.

Senator **Cohen**. The ships we are going to convert for MPS have no commerical utilization once they have been converted, do they?

Admiral **Cowhill**. They have no commercial utilization in the sense of making a profit, but they do carry cargo back and forth. The nature of the ship is very similar to any cargo-carrying ship, whereas a hospital ship is pure military. It was a judgment call. This does not fit the concept of convert-and-charter, so we are requesting the full funding for it.

LHD-1

Senator **Cohen**. Admiral Walters, describe in a little bit more detail—and you perhaps can talk about it tomorrow in more detail—but give me some idea how the LHD-1 is going to offset our current amphibious difficulties?

Admiral **Walters**. Well, first of all, it has a lot of helo spots on it. It carries about 1,800 troops. It has a large amount of cube in it for carrying Marine supplies. It will have a well deck that will accommodate three of the landing craft air cushion which is one of the major modifications to the ship.

It will carry quite a number of helicopters, both the CH-46 and the CH-53E, which is the new heavy-lift helicopter. It has, of course, the 20-plus-knot speed that we need for amphibious forces, and it has the command and control capabilities that are needed to operate with amphibious forces.

It will have the cargo-handling capability to move the stores that are in the ship ashore and to meet the timeframes that the Marine

Corps needs. These are very rigorous requirements because when you are putting troops ashore you need to move the supplies in behind them very quickly. The ship meets that capability from the standpoint of getting the troops ashore and then following it up with their supplies.

The other aspect is that you have a trade-off in the basic design between helicopter capability and VSTOL capability. Because it is a convertible ship, you could choose to mix helicopters and VSTOL, for example. You could carry, say, 8 VSTOL aircraft and then a mix of helicopters which would give you some close air support organic to that particular force.

We lose nothing, as I can see it, in the convertibility factor, we only gain. What we have done is to make magazines convertible to be able to handle bomb-type ammunition for the VSTOL aircraft, which has different stowage requirements than the cargo ammunition that it would normally carry for Marine ground units.

We will have to move the elevators on the ship, for example, to support flight deck reloading of armament for AV8's. You do not have to do that with helicopters. So that is another major design change.

We are going to add capability to the ship for air intermediate maintenance level support. But most of it, indigenous to the ship, will be for the helicopters, and it is not dissimilar to the maintenance facilities which will serve the VSTOL.

For VSTOL we could move equipment aboard in vans. We will make the spaces in the ship modular so we can move those vans aboard to support increased numbers of VSTOL-type aircraft when we go to the secondary sea control mission.

Senator COHEN. Does the program objective of simultaneously trying to take care of an assault echelon of the MAF and the MAV take into account a nonavailability factor of 15?

Admiral WALTERS. Yes, sir, it does. We have always included that as part of our figures, because there generally is about 15 percent of the force that is just not available due to overhaul and repair.

LCAC ENGINES

Senator COHEN. You mentioned LCAC's. There has been some discussion about problems with respect to the engines of the LCAC's. Could you tell me anything about those reports?

Admiral WALTERS. Yes, sir. There were two engines in contention. The TF-40, as I recall, was one of them. And the other one was the LM-500. I understand that the TF-40 was chosen and it will be an upgraded engine to give it the shaft horsepower that is needed in the LCAC's.

That choice was made by the prime contractor, which is Bell Aerospace, of Textron.

Senator COHEN. What is the status of the LCAC program in terms of cost and time schedule?

Admiral WALTERS. Of course, we are very early in the program. But so far as I know, the program is on schedule, and we anticipate that we will be within cost. We have set that program up to try to establish a production line so that we will keep him continously producing, which will be more efficient.

We had three last year and are requesting three this year. Then we are building to 6 and then 12 a year, which will ultimately be the production capacity. The program was structured to permit an economical maintenance of that production line because we do want to evaluate the first three craft.

If we stopped the line and started it again, it would not be efficient for the contractor and we think that we have already done enough work with the experimental craft to insure that this is a very low-risk program. We have structured the program to permit efficient production of the craft.

NAVAL GUNFIRE SUPPORT

Senator **Cohen**. General Miller, during the 1970's the Department of Defense developed an 8-inch major caliber lightweight gun which has since been canceled. To my knowledge, there is no naval gunfire support program currently underway.

I guess the question I have is, when you mention the battleships coming back, is that going to be sufficient to give the Navy gunfire support that you think is going to be required in likely scenarios?

General **Miller**. I do not think that that is sufficient, no, sir. I think that it is too few in number. I believe that we should have more platforms as well as more guns, and, as I mentioned earlier, longer-range than those guns which are on the bulk of the Navy ships.

Senator **Cohen**. Which programs are underway now?

General **Miller**. None are underway now.

Senator **Cohen**. Admiral Walters, do you think we should be funding some of these naval gunfire support programs?

Admiral **Walters**. We have a large population of 5-inch guns. They are very modern guns. They have a high rate of fire. They have been battle-tested in Vietnam. We think they are very good guns.

We did have a programs which I have supported as a requirement from the fleet to improve this capability through guided projectile and the Seafire system.

Senator **Cohen**. Both of those have been dropped?

Admiral **Walters**. Yes, sir, they have.

Senator **Cohen**. Where does that leave naval gunfire support? You are left with a 5-inch gun as opposed to the SAL–GP. My understanding is that has twice the accurate range.

Admiral **Walters**. The gun with the GP projectile has a range of about 15 miles. We get about a 12½-mile range with conventional ammunition.

Senator **Cohen**. That is not nearly as accurate.

Admiral **Walters**. That is right. That is maximum range and you lose accuracy through dispersion. We then have a hiatus of gun capability between the 5-inch, which without GP is about 12½ miles range out to the roughly 22 miles that you get with 16-inch, and there is nothing in between. We have no gun developments to fill that gap.

Senator **Cohen**. Do you support the DDGX?

Admiral **Walters**. Yes, sir, I do.

Senator **Cohen**. There has been discussion of the 150mm vertical-load gun system for naval gunfire support. What is your view of that?

155-MILLIMETER GUN

Admiral **Walters**. The 155-millimeter gun is a relatively new development, as far as I am concerned. I was exposed to it 8 or 9 months ago. It is attractive. It is interesting. It is simple; simpler for example than our gun systems today, because it does eliminate part of the loading mechanism which has been part of the problem in the past with high-firing-rate guns. In the 155 millimeter the barrel breech goes down and picks up a round and the rammer becomes the loader.

It is an interesting concept. 155-millimeter, of course, provides the kind of range that General Miller wants. It has a range improvement of about 50 percent over a 5-inch gun, because it is bigger. Probably it has a slower rate of fire. But it delivers a projectile that is roughly four times as heavy. So there are advantages to it.

Now, from my perspective as the officer who has to absorb this program within the Navy's budget, it is a matter of priorities. Today I have a population of 245 5-inch mounts which is growing to 300. The support, the spare parts and the ammunition, are all funded programs. I have not been able to foresee, nor has the CNO foreseen, a way that we can now take up the support of another gun system.

Senator **Cohen**. So, in essence, we have no 155-millimeter, you have no SAL–GP. You are left with your 5-inch and the battleships coming up.

Admiral **Walters**. Yes, sir, and the reason that I chose to support the 5-inch SAL–GP and the Seafire was because it supported my current gun population and made it better. As such, it was much more affordable to me than starting a new gun development.

Senator **Cohen**. General Miller, do you have any comments to add about the 155-millimeter?

General **Miller**. Admiral Walters has stated the advantages very well, and that meets our requirement. Again, I guess I have to state that there are requirements and funds and priorities, and I state the requirements and then beat on the table.

Senator **Cohen**. We do not want you to do that just yet.

Gentlemen, would you give the committee your view of a breakout of how the five fingerprints for amphibious lifts, the assault, the echelon and the MAF and a MAV have changed since 1965? Could you give us a breakdown? You do not have to do it now.

General **Miller**. I would like to do that for the record. As I mentioned earlier, there has been some modest growth in cube and some growth in the helicopter spots. those are the two critical fingerprints. You asked Admiral Walters about the LHD–1 a moment ago. That is the ship that does the most to correct both of those fingerprints.

So I think it is extremely important that we keep that one on track and keep the program going.

[The information follows:]

Amphibious Lift Fingerprints

General Miller. Marine Corps amphibious lift requirements were orginally stated (in 1970, with an update in 1976) in terms of lift needed to transport the assault echelon of a Marine Amphibious Force (MAF(AE)), formerly known as a division/wing team. Five "fingerprints" (troops, vehicle square, cargo cube, helicopter spots, and landing craft) are commonly used to describe the total lift requirement.

In 1981, by agreement of the Secretary of the Navy, the CNO, and the CMC, the amphibious lift objective was raised from 1.15 MAF (AE) to simultaneous lift for a MAF (AE) plus a Marine Amphibious Brigade (MAB). Fingerprints for the new objective were first stated in the Marine Corps Mid-Range Objectives Plan (MMROP) published in April 1981 (updated in October 1981), and reflected a great deal of apparent "growth" that could be largely attributed to a pair of factors: (1) The addition of the MAB, which carries 30 days of supply sustainability (vice 15 days for the MAF (AE)), thus driving up the cargo cube factor; and (2) Programed firepower and mobility enhancements for the landing force (e.g., M-198 howitzer, Light Armored Vehicle), which drove up cargo cube and helicopter spot totals. At the same time, the first definitive statement of lift requirements for Navy Support Elements (NSE) (e.g., construction battalions; mine countermeasures forces) was being developed. In combination, the new requirement for MAF (AE)-plus-MAB-plus-NSE showed "growth" across the board, with the fingerprints of cargo cube and helicopter operating spots the most heavily affected.

The following table reflects USMC (and Navy Support Element) lift requirements from 1970 to the present:

	Troops	Square (X1,000)	Cube (X1,000)	Helos (CH-46 equivalents)
1970 MAF (AE)	33,457	689.0	1,211.2	351
1976 MAF (AE)	34,126	758.0	1,356.6	352
1981 MAF (AE)	32,562	723.3	1,859.0	484
1970 MAB	N/A			
1976 MAB	N/A			
1981 MAB	15,568	424.7	1,544.3	200
1981 NSE (MAF)	3,241	56.3	195.3	30
1982 NSE (MAF)	3,395	56.3	226.6	30
1981 NSE (MAB)	2,351	68.5	206.2	15
1982 NSE (MAB)	2,352	68.5	219.4	15

When matched against a shrinking inventory of amphibious ships that face extensive block obsolescence in another decade, the current lift requirement presents a significant problem that is not amenable to a short-term fix. A steady shipbuilding program, that stands in sharp contrast to the relative inactivity of the past decade, is required. The landing force is programing firepower and mobility enhancements that it needs to fight and win on a modern battlefield, once ashore. Amphibious lift capability must keep pace. Its decline must be halted—and reversed.

Senator Cohen. Admiral Carroll, last year the Department of Defense proposed consolidating a number of the functions of the Military Sealift Command under the Army's Military Traffic Management Command. What is the status of that plan to consolidate those two command structures?

Admiral Carroll. Secretary Lehman, on March 6 of this month sent a letter to Secretary Carlucci, requesting that we not pursue integrating the Military Sealift Command with the Military Traffic Management Command. I know there is a meeting today, this morning, between the Chief of Naval Operations, the Secretary of the Navy, and Secretary Carlucci, I have not talked to CNO or the Secretary of the Navy as to the results of that meeting. So it would be improper for me to comment at this time.

U.S. MERCHANT MARINE FLEET

Senator **Cohen**. Admiral Carroll, one final question. What is being done to assure that there are going to be enough of the right kind of ships in the U.S. merchant marine fleet to satisfy our sealift requirements with a view toward the future?

Admiral **Carroll**. That is part of the problem. The U.S. merchant marine has continued to go downhill. That is the fleet we count on for our sealift capability. For the first time in peacetime we are starting to require ships in some number that will make up for that shortfall. We have some very exciting programs coming along: The maritime pre-positioning programs and the fast sealift programs.

But it is unfortunate we are in the position we are in today. We do not want to compete with the U.S. merchant marine, we do not desire to build additional ships in this category. It is all due to the fact that U.S. merchant marine is declining, a very sad state of affairs for the United States.

Senator **Cohen**. What do you recommend we do?

Admiral **Carroll**. The entire maritime industry has to get their act together. We do not have our act together now. We do not have our act together in the Government, within the various disciplines of the maritime industry, between the shipbuilders, the owners, and maritime unions.

Unfortunately, when we come over here to talk about programs, I can understand the Congress reluctance to get in the middle of a squabble where we cannot agree.

Senator **Cohen**. No, we are trying to get in the middle of the squabble. The question I am asking you is what do we do, what would you recommend that we in the Congress do, not stay away and let it continue.

Admiral **Carroll**. We have to have a national policy. No question about that, and Admiral Shear of the Maritime Administration is attempting to formulate that administration policy in this area. What it is at this time, I do not know.

We have a situation now where our building yards, if we want to build a ship in the United States, it is at least double what it is to build it overseas. Our union rates to pay our mariners is double our nearest competitors.

I do not have the answers. I wish Admiral Shear the best of success in putting together a program that will bring the merchant marine back to viable operating condition. I do not have any suggestions.

Senator **Cohen**. Does anyone at the table have any suggestions?

[No response.]

Senator **Cohen**. Gentlemen, we have some questions which we will submit to be answered for the hearing record.

[Questions with answers supplied follow:]

Questions Submitted by Senator William S. Cohen

RDF SUPPORT REQUIREMENTS

Senator **Cohen**. I understand that support requirements for possible use of the RDF would involve a combination of airlift, sealift and maritime prepositioned units. Can these sealift requirements be met by government ships—that is, U.S. Navy and National Defense Reserve Fleet?

Admiral CARROLL. No sir—we must also depend upon our U.S. Merchant Marine assets.

MERCHANT MARINE FLEET

Senator COHEN. How many ships are there in the U.S. Merchant Marine suitable for sealift purposes? How many of each kind are there?

Admiral CARROLL. As of March 16, 1982, there are 358 militarily suitable ships flying the U.S. flag. Of that number, 216 were dry cargo ships and 142 were tankers. The militarily usable cargo fleet consisted of 84 breakbulk, 105 container and combo ships, 8 roll-on, roll-off vessels, and 19 barge and Seatrain ships. The Navy is vitally concerned over the small number of ro-ros and barge ships in the U.S. fleet since they are by far the most useful for military operations in strong contrast to containerships that require sophisticated port facilities to unload.

FOREIGN REGISTRY U.S.-CONTROLLED FLEET

Senator COHEN. How many ships are there in the foreign registry U.S. controlled fleet ("flags of convenience") that are suitable for our sealift needs? Would they be available to the U.S. government in time of war? How about for contingency operations?

Admiral CARROLL. I count a total of 70 effective U.S. controlled ships of use to the military: 14 breakbulk, 2 barge and Seatrain plus 54 tankers. This category is limited to only ships registered in Panama, Liberia, and Honduras, to companies that have more than 50 percent stock U.S. owned, and have agreed to return ships to U.S. control in time of war or national emergency. We plan on them responding accordingly.

T-5 TANKERS

Senator COHEN. Why is the Military Sealift Command insisting that the T-5 tankers be built in the United States, but allowing the main propulsion system to be manufactured in a foreign country?

Admiral CARROLL. MSC's RFP requires that the replacements for the T-5 tankers be built in the United States in order to comply with cabotage law, i.e. the Jones Act. The tankers must also comply with the Buy American Act. It is noted that neither the Jones Act nor the Buy American Act specifically precludes the use of a main propulsion engine manufactured in a foreign country.

SLOW-SPEED DIESELS

Senator COHEN. Does the Military Sealift Command have a significant requirement for slow speed diesel versus medium speed engines which are already in Military Sealift Command service?

Admiral CARROLL. MSC has not required the potential offerors to utilize any particular type of engine. Slow speed or medium speed diesels or stem propulsion plants could be used so long as the vessels meet the power and speed requirements. It is noted that the cost of fuel consumed by the tankers will be one of MSC's evaluation factors since MSC will be paying for the fuel consumed under the time charter. Therefore, it is assumed that the tankers with the most fuel efficient propulsion plant would have a competitive advantage.

AMERICAN-BUILT DIESEL ENGINES

Senator COHEN. Does the Military Sealift Command have any particular problems with the Transamerica Delaval (medium) engine or the Allis-Chalmers (slow speed) diesel engine (Burmeister-Wing) which would make it buy a foreign propulsion system?

Admiral CARROLL. MSC has been generally satisfied with its experience with American built medium speed diesel engines (including Colt Pielstick, not mentioned) and has no requirement which would "make" an offeror purchase a foreign propulsion system. It must ber understood that, due to the commercial nature of the build and charter program, it is absolutely essential that owner/ operators and their shipyards have the maximum discretion permitted by law in the selection of all components of the vessels including the main propulsion engines. Their decisions will undoubtedly be based on a number of considerations including compatibility with the ship design, construction schedule, cost to install, fuel efficiency and life cycle maintenance costs.

U.S.-FLAG MERCHANT MARINE SHIPS

Senator **COHEN**. Admiral Cowhill, what are the alternatives to using U.S.-flag merchant marine ships for our sealift requirements in war and contingency operations?

Admiral **COWHILL**. One alternative would be to build a fleet of amphibious cargo ships, manned by U.S. Navy personnel, such as we had in World War II. Short of that sort of contingency, that alternative is currently not a financially realistic one. Therefore, our contingency plans call for supplementing the U.S. flag fleet with ships from other sources to meet our total sealift requirements. Those sources are: first, the large fleet of ships owned or controlled by U.S. interests and flying under flags of convenience. This so-called Effective U.S. Controlled (EUSC) fleet is roughly equivalent in size to the U.S.-flag fleet and is subject to the same requisitioning regulations as its U.S.-flag counterpart. Next are the government owned ships of the National Defense Reserve Fleet (NDRF) and its Ready Reserve (RRF) component. Although the NDRF is aging and has limited capability, the RRF is a modern and ready component of 27 ships which our plans call for increasing in numbers. Finally, we would call on the assistance of allied shipping. In a NATO contingency, for example, there are an additional 400 ships committed to sealift requirements. We are working with other allied nations for similar support under contingencies that would involve their involvement.

RESERVE FLEET MANNING

Senator **COHEN**. Are there enough merchant seamen to man the reserve fleet ships which are being included in sealift mobilization planning?

Admiral **CARROLL**. If the whistle blew today, I personally feel we could find enough mariners to man the ships of the National Defense Reserve Fleet (NDRF). Maritime unions, however, tell us they have enough seamen in their workforce to man ships of the Ready Reserve Force segment of the NDRF, but not the entire Reseve Fleet. One problem facing the United States is the increasing age of U.S. mariners. It stands at 54 years average today and can be expected to increase as the U.S. merchant marine workforce continues to shrink in size. Age will climb because mariners with seniority will hold onto the remaining billets and few younger mariners will enter the workforce.

QUESTIONS SUBMITTED BY SENATOR GARY HART

LAV PRIORITY

Senator **HART**. General Miller, what priority is the LAV program for the Marine Corps, among programs to support Marine ground units?

General **MILLER**. The LAV program ranks with our highest priority efforts in programs that support Marine ground units. The light armored vehicle represents a major enhancement in tactical mobility and firepower.

IMPACT OF LAV ON TACTICAL MOBILITY

Senator **HART**. General Miller, if the LAV program were terminated, what would be the effect on the mobility of Marine ground units?

General **MILLER**. The effect of termination of the LAV program would be significant. Our program to enhance the capabilities of our ground combat force structure is a balanced effort and the Light Armored Assault Battalion wherein the LAV will be employed is integral to that effort.

MARINE FORCES IN OPEN TERRAIN

Senator **HART**. Would the lack of LAV units seriously degrade the capability of Marine forces fighting in open terrain?

General **MILLER**. The inherent tactical mobility and firepower of the Light Armored Assault Battalion greatly enhances our capability to conduct such missions as reconnaissance in force, screening and security.

Marine infantry units are not limited to foot mobility. Our helicopters, amphibious assault vehicles and motor transport all provide support to enhance the mobility of our infantry units. We are also increasing the antiarmor firepower of our infantry by adding additional TOW and DRAGON missiles and the MK19 40mm grenade launcher. Therefore, the Marine Corps has significant firepower and mobility to fight in open terrain.

INFANTRY UNITS IN OPEN TERRAIN

Senator **Hart**. If infantry units fighting in open terrain are only foot mobile, are they likely to take heavier casualties than if they have mobility comparable to that of opposing mechanized forces?

General **Miller**. We do not believe that Marine units are more likely to incur heavier casualties than our potential adversaries whether or not those enemy forces are mechanized.

Senator **Hart**. General Maloney, did the Army at one time plan to purchase Light Armored Vehicles from the joint program in numbers exceeding 2,000 vehicles?

General **Maloney**. Yes sir, last year we announced a potential buy of 550 LAV's with the Bushmaster cannon plus an additional procurement of about 1,500 squad carriers. We have more recently refined our calculations to project a total procurement of 2,315 LAVs. That number includes 680 LAV's with the 25mm Bushmaster, 183 Light Armored Recovery Vehicles and 1,452 Light Armored Squad Carriers.

Senator **Hart**. Has this projected buy been reduced? If not, is a reduction contemplated, and if so, to what number?

General **Maloney**. The Army has made a definite commitment to the joint LAV program. At this point we are definite in plans to procure 680 vehicles with the 25mm Bushmaster cannon over a four year period. We are keeping our options open with regard to other vehicles from the LAV program until June this year. At that decision point we will evaluate operational test data from the High Technology Test Bed Division at Fort Lewis Washington to determine if the squad carrier (1,452 vehicles) will come from the LAV program. We will also make a decision on the source of the recovery vehicle for the Army—another 183 vehicles

Senator **Hart**. If a reduction is planned or contemplated, what is the likely effect on unit cost of the vehicles the Marine Corps will purchase?

General **Maloney**. It is not possible to accurately determine the impact of a reduced Army buy on the unit cost of the vehicles. However, intuitively one would expect the unit cost to increase

LAV PROGRAM OPTIONS

Senator **Hart**. General Miller, in the event the costs of the selected LAV become prohibitive, what options does the Marine Corps contemplate to acquire an LAV at an affordable price?

General **Miller**. In the event that the cost of the selected light armored vehicle is prohibitive the Marine Corps would reevaluate the program. However, we are very confident that the joint program will result in an affordable vehicle that will fulfill Marine Corps requirements.

OFF-THE-SHELF LAV

Senator **Hart**. Would buying an off-the-shelf vehicle from one of the manufacturers whose vehicles have been tested be a possible option?

General **Miller**. If we are required to reevaluate the program due to cost, we would not arbitrarily close out any option.

Senator **Cohen**. On that happy note, the committee is adjourned.

[Whereupon, at 4 p.m., the committee was adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

FRIDAY, MARCH 19, 1982

U.S. SENATE,
SUBCOMMITTEE ON SEA POWER AND FORCE PROJECTION,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

MAJOR STRIKE PLATFORMS

The subcommittee met, in open session pursuant to notice, at 10 a.m., in room 224, Russell Senate Office Building, Senator William S. Cohen, chairman, presiding.

Present: Senators Cohen, Warner, Denton, Stennis, Byrd, and Hart.

Staff present: James F. McGovern, general counsel; Francis J. Sullivan, minority staff director; Paul C. Besozzi, minority counsel; L. Wayne Arny III and Patrick L. Renehan, professional staff members; Mark B. Robinson, research assistant; and Kathleen L. McGuire, staff assistant.

Also present: Buzz Hefti, assistant to Senator Warner, Jim Dykstra, assistant to Senator Cohen; Paul Schreiber, assistant to Senator Denton; Don Imgram, Eric Grulke, assistants to Senator Levin; Gray Armistead, assistant to Senator Byrd; and Bill Lind, assistant to Senator Hart.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator COHEN. The Sea Power and Force Projection Subcommittee will come to order.

This morning I have the pleasure of welcoming Vice Adm. Wesley McDonald, the Deputy Chief of Naval Operations for Air Warfare, and Vice Adm. Robert Walters, the Deputy Chief of Naval Operations for Surface Warfare. They are here to testify on the Navy's needs for aircraft carriers. Specifically, Admiral McDonald will present to the subcommittee the Navy's findings on the design studies on aircraft carriers in general, and specifically on light carriers, which were requested by this committee last year.

Following that, Admiral McDonald will present the Navy's rationale for this year's budget request for two *Nimitz* class aircraft carriers. Admiral Walters will then touch on the LHD-1 class convertible amphibious ship.

Gentlemen, once again I welcome you and apologize for the rescheduling of the hearing from last week. I really do appreciate your flexibility and responsiveness.

Before we proceed, I would like to make a brief comment. As I see it, we have before us today three intertwined issues, all involving carriers of one sort or another.

One, should the Congress authorize two *Nimitz* class carriers in 1983? What benefits accrue to the Navy and the taxpayer?

Two, should the Congress, instead, authorize the construction of at least one smaller carrier as an adjunct to the 15 large-deck-carrier-force goal?

Three, should the Congress authorize long lead procurement for an LHA follow-on, designated the LHD-1 class, to be used in both amphibious and sea control or tactical warfare roles?

Moreover, I believe that the answers that we decide upon, no matter what they are, will be the primary issues of discussion throughout the remainder of the congressional budget process, both in the authorization and in the appropriation committees. Consequently, it behooves us to learn as much as we possibly can about the issues so that we will have the broadest data base from which to act.

Admiral McDonald, since you are the lead witness and are going to provide most of the testimony, I will ask you to go first. Admiral Walters took most of the heat from us last Monday and again yesterday, I might add. We will have another shot at him next Monday, along with you and Admiral Thunman.

But before we proceed, I would like to turn to the Senator from Virginia, Senator Byrd, to see if he has any opening remarks. Then I would yield to Senator Hart for any comments that he might have.

Senator Byrd. I welcome the Navy here today. For some time this committee has tried to get the Navy to provide us with an objective analysis of the capabilities of a small aircraft carrier. I might say this effort would have been a severe test of the patience of the Old Testament character, Job. I am pleased that this delay is now behind us.

Some of us have been very clear in making our personal feelings known about little and large carriers. I am one of those. However, I am not wedded to any one idea forever. If the merits of the matter change, then I am willing to change.

Congress has the constitutional responsibility to provide and maintain a Navy. To meet this responsibility we need the facts as they exist. I believe that Congress could make the right decision on this or any other issue only if all the facts are available.

Admiral McDonald, I also welcome you here today to discuss the fiscal year 1983 budget. Particularly I am anxious to hear your rationale for deviating from the long-standing past and coming forward with the new idea of buying two nuclear aircraft carriers.

I might say, this is somewhat startling. As you know so well, these carriers cost a lot of money, even if savings are realized. I want to hear more about these savings, and I would want your assurance that these estimates are reasonable. I would need to be reassured that these estimates will stand up under the closest scrutiny. If you cannot provide this assurance, I do not have much hope of two carriers being authorized in the 1983 defense authorization bill.

I also want some solid estimates on how much sooner these ships will enter the fleet if we contract for two of them at one time. Admiral, please give us your plans for the interface or meshing together of the other ships, cruisers, and destroyers that you plan to utilize in the battle group forces. How would they come together if you buy two carriers in 1983?

Mr. Chairman, I will have some specific questions after the testimony.

Senator COHEN. Senator Hart?

Senator HART. Thank you, Mr. Chairman.

Mr. Chairman, I consider this morning's hearings and the deliberations that will result from them among the most important that have occurred since I have been a member of this committee. I know of your intention and probably your need to go into closed session because of some of the material we will hear, but I hope that as much as possible of the hearing and our further committee deliberations on this question will be in the open because I think the American people should know and need to know the decisions that we will all be making.

When this fiscal year 1983 authorization bill comes to the floor in the next few weeks, I think the Senate itself will face a question of extremely historic importance regarding the future of the Navy because of the President's request for the two nuclear-powered aircraft carriers. If the Senate approves that request, we will continue as far into the future as any of us can see to have a Navy dependent on a very small number of ships, somewhere between 13 and 15 large aircraft carriers. We will commit at least $24 billion to adding just two more carriers to the fleet, since a *Nimitz* carrier task force costs, by a conservative estimate, at least $12 billion.

Perhaps most importantly, Mr. Chairman, we will have decided that the future of the Navy will simply be a mirror of the past. The carrier task force evolved more than 40 years ago. It was an appropriate response to the Navy of Imperial Japan, a navy whose main strength was in its surface fleet, especially its carriers and battleships.

But the Soviet Navy, as we know it today, is not the Imperial Japanese Navy of 40 years ago. Its main strength is not its surface ships but its submarines. It has had decades to plan and prepare to defeat an American Navy based on the big carrier and on a declining number of those carriers. Today the Soviet Union has 260 tactical and cruise missile submarines and 380 naval bombers armed with antiship missiles, each of which could knock a carrier out of action. How much difference, in that context, would just two more carriers really make?

Mr. Chairman, we live in an era where every surface ship is becoming increasingly vulnerable. If we want to keep our carrier task force viable, we need far more than two additional carriers. We need to disperse our naval aviation onto a significantly larger number of ships, and two is not a significant number. Yet if we keep building *Nimitz* class carriers alone, we simply cannot afford more than the 15-carrier task force. We have priced ourselves out of the market.

Mr. Chairman, when the bill comes to the floor of the Senate, I intend to move to defer one *Nimitz* class carrier for consideration in a future year when pressures on the budget are less severe, and move to substitute two light carriers for the remaining *Nimitz*.

Curiously enough, Mr. Chairman, just this morning I opened my mail and quite by accident received a letter from a retired vice admiral of some distinction. Since he did not in the letter authorize its disclosure, I will not identify him, but I do want to quote a paragraph from that letter.

He says, "Keep up your fight against the big aircraft carriers." I might parenthesize, I am not fighting against the big aircraft carriers. I am fighting for more aircraft carriers. "You are right," he says, "but be sure to keep naval aviation strong, based aboard smaller carriers, devoted to sea control first and power projection a sure second. If we place so much of our money in huge carriers with aircraft designed to beat any shore-based enemy aircraft, which is why," he says, "the ship must be so big, surrounded with almost equally expensive defensive screens on and below the surface of the sea, we will not be able to afford the survivable forces we must have to gain and hold control of the sea. Our flag officers know the true vulnerability of our carrier battle group," and then he goes on to talk about what he fears would happen in a face-off with the Soviet Union.

That, Mr. Chairman, is not a relatively junior member of the Armed Services Committee of the Senate. It is a retired vice admiral.

So, Mr. Chairman, I look forward to these hearings. I think they are extremely important.

Senator COHEN. Thank you, Senator Hart.

Admiral McDonald, I understand that we are going to be discussing some future ship designs and for that purpose alone we will be going into closed session, but I would agree with Senator Hart that as much of the hearing as possible should be open.

If there is no objection, I will close the hearing for a period that I would expect not to exceed 30 minutes, but certainly no longer than 45 minutes. We will be back in open session I would hope by 10:45 but no later than 11, for those members of the public who want to return. If there is no objection, the session will be closed.

[Whereupon, at 10:10 a.m., the hearing was closed, to reopen at 10:57 a.m.]

EXECUTIVE SESSION

Senator COHEN. Admiral McDonald, you may proceed. There is some discussion amongst the Members up here as to why we are in closed session.

STATEMENT OF VICE ADM. WESLEY L. McDONALD, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (AIR WARFARE), ACCOMPANIED BY VICE ADM. ROBERT L. WALTERS, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (SURFACE WARFARE); VICE ADM. EARL B. FOWLER, JR., U.S. NAVY, COMMANDER, NAVAL SEA SYSTEMS COMMAND; AND REAR ADM. EDWARD J. HOGAN, JR., U.S. NAVY, DIRECTOR, AVIATION MANPOWER AND TRAINING, DIVISION AND CARRIER PROGRAMS DIVISION

Admiral McDonald. Yes, sir, and maybe I can explain that, Mr. Chairman.

Thank you very much for the opportunity to be here today to discuss the nuclear carriers, and as you have outlined, the discussions on light carriers. I am particularly privileged to be here, Senator Byrd and Senator Hart, before this committee today because I usually appear to discuss aircraft requirements and very seldom have the opportunity to discuss ship construction, Navy account with Admiral Walters.

So it is a unique pleasure to be here this morning and I feel especially privileged to be able to put forth my views relative to carriers.

As I have indicated, Admiral Walters is here, who is the DCNO for surface warfare, and Admiral Fowler, who is the Commander of the Naval Sea Systems Command. Admiral Walters really runs the SCN account, procurement of ships, and can discuss in detail those intermeshes that will take place in ships other than the carrier, and the carrier itself. And Admiral Fowler is, of course, the expert who can deal in the technical aspects of the shipbuilding parts of the Navy.

If I may, I would like to establish a little background. Both the Secretary of the Navy and the CNO have clearly articulated the Navy's requirements for a 600-ship Navy. This has been strongly endorsed by the Secretary of Defense and the President. For one of the first times in my years here in Washington, and in the recent past, we have a national command authority consensus of opinion that we should be building toward a 600-ship Navy.

As a matter of fact, in the fiscal year 1982 DOD Appropriations Act, the Congress itself expressed strong support in this area. I would like to read section 791:

> It is the sense of the Congress that a larger and stronger American Navy is needed as an essential ingredient to our Armed Forces in order to fulfill its basic missions of protecting the sea lanes, preserving the safety of the free world's commerce, assuring continued access to raw materials essential to the well being of the free world, answering our capacity to project effective American forces into regions of the world where the vital interests of the United States must be protected, engaging the navy of the Soviet Union or any other potential adversary successfully, continuing to serve as a viable leg of our strategic Triad, providing visible evidence of American diplomatic, economic and military commitments throughout the world.
>
> In order to conduct the numerous and growing missions of the modern American Navy, the goal of a naval inventory of approximately 600 active ships of various types by the end of the century at the latest is highly desirable. The exact figure to be flexible to accommodate new designs as specific details of our naval mission evolve to meet various contingencies.

This 600-ship Navy is built around 15-carrier battle groups, with, of course, the carrier being the primary centerpoint of those battle groups. The CNO has stated in testimony, before this committee, that 15 carrier battle groups are essential if we are again going to say with confidence that we have attained a position of maritime superiority.

It is patently obvious that the primary difference in the offensive capabilities of the U.S. Navy and the Soviet Navy today and projected in the future, resides in our aircraft carriers.

In addition to expressing concern for the growth of the Navy, this committee has also expressed specific concern relative to the exact status of the light carrier design and types of designs that are being considered, as enumerated by the chairman.

In letters to the chairman of the Armed Services Committee in June of 1981 and then again in February of 1982, Secretary Lehman has responded to these specific questions, and on March 12, more formally responded to the language in the conference report, Department of Defense Authorization Act of 1982, which requested the Navy submit by March 15, 1982 the most operationally feasible aircraft carrier design that could, one, be approximately 40,000 tons and capable of operating conventional takeoff and landing aircraft; two, be capable of being built in a greater number of shipyards than is currently the case; and three, be able to serve as an adjunct to and not a replacement for the large-deck carrier that the conferees agreed is and will continue to be the nucleus of the carrier battle group.

With your permission, and you have already indicated that, Mr. Chairman, I would like to structure the presentation to discuss first, an overview of our carrier programs, discussing in detail requirements to talk to design and the exact status of where we are in the light carriers, and then to proceed in explicit detail on our request for the two nuclear carriers that appear in the fiscal year 1983 budget.

I was going to ask you to close the hearing at the appropriate time as you have done because when we start discussing design, there are parameters which will be reviewed with viewgraphs that disclose speed, tonnage, and capabilities that are classified, and I appreciate the closing. We will stay close for a minimum amount of discussion time to respond to obviously the concern that Senator Hart has expressed this morning in the interest of the people. We do agree that this is a very vital subject, and we will try to get out of the classified section as quickly as we can. There may be a time for questions that we have to look at it very guardedly or we can respond for the record, whichever is your desire.

Senator COHEN. With respect to the discussion of the two big-deck carriers, will your presentation involve anything that we cannot discuss openly?

Admiral MCDONALD. No, sir. The only thing that is classified, Mr. Chairman, are the slides specifically on the design features themselves. The rationale that goes with that is not classified either. But there may be some questions that are classified in the first phase of the discussion period, and we probably should stay closed to allow you the freedom to ask those questions.

Senator COHEN. If you would proceed with the designs that you have explored. If you had to pick among the light carriers, which design is most preferable and why? What do you gain by choosing that design and what do you lose? As far as discussing the specific designs we will stay in closed session, but we will probably go back into open session and review some of those questions without reference to the design numbers and specifics.

Senator Byrd?

Senator **Byrd**. Admiral, I assume that you can discuss, in open session, the rationale for large carriers versus small carriers without getting into the design?

Admiral **McDonald**. Yes, sir. That is a basic philosophical discussion which certainly can be entered into. If we get into specifics, relative to numbers of aircraft and speeds of ships, and those things such as passive protection systems, then of course we are getting into classified information. But we can discuss it in very general terms, which hopefully will be adequate. If it is not, Senator, we can respond appropriately by questions for the record or closing the session, as you so desire.

Senator **Cohen**. Senator Stennis, did you have any questions?

Senator **Stennis**. Not at this time. I came in a little late. I am glad to be here.

Admiral **McDonald**. I have submitted two statements, Mr. Chairman, for the hearing, to assist the members in the fullest possible understanding of the mission of naval aviation as it relates to the matter of carrier procurement. The first is a classified statement that addresses mission areas, all aspects of naval aviation. It is the same statement provided earlier and printed as part of the Subcommittee on Tactical Warfare hearings.

The second statement relates solely to the issue before the subcommittee today, and that is on carrier procurement. And I would request that it be entered into the record, sir.

[The prepared statement of Admiral McDonald follows:]

PREPARED STATEMENT OF VICE ADM. WESLEY L. McDONALD, DEPUTY CHIEF OF NAVAL OPERATIONS (AIR WARFARE)

INTRODUCTION

Mr. Chairman, I am pleased to have this opportunity to present to this committee my assessment of the aircraft carrier program and its key role in the restoration of maritime superiority to the United States. Both the Secretary of the Navy and the Chief of Naval Operations have comprehensively testified to the necessity for this restoration.

Vice Admiral Walters, here with me today, can provide you with an overview of the entire shipbuilding program. I am here to present testimony, specifically related to our carrier construction plan, and to address how it will provide the essential element of the carrier battle group, as we expand our Navy to restore maritime superiority. I would first like to present a step by step logic assessment of the requirements, or missions, the U.S. Navy is tasked to fill and our plans to meet these missions. Thereafter, I will discuss the acquisition profile for multiship procurement and its associated advantages.

MISSIONS

While Americans have historically been uneasy about the maintenance of a large Military Establishment and high defense budgets, the vast majority of our citizens recognize the requirement for a national defense posture which is strong enough to preserve the peace and capable enought to ensure victory should deterrence fail. They are properly concerned about the risks to our people and our interests overseas, including our growing economic dependence on raw materials and markets abroad. There is also an increasing apprehension about our ability to defend our interests in Third World countries and to stand firm against a Soviet incursion far from our shores, without resorting to a nuclear option.

Naval forces have proven to be time and again the best—and sometimes the only—means to provide a broad range of responses worldwide against threats to our national security and/or vital interests. Mobile, flexible and autonomous, their use is highly selectable, They can be deployed or recalled. engaged or disengaged as circumstances warrant. Of all the world's naval forces, the aircraft carrier battle group is unquestionably the most flexible and powerful—possessing the full spectrum of capabilities necessary to defeat our potential enemies at sea. The carrier battle group's essence is in its tactical air power which adds a dimension of sea control and power projection otherwise unattainable. The unexceeded warfighting capability of the carrier airwing, and that inherent in the accompanying escorts, serves as a preeminent display of American sea power and, as such, is a vital deterrent to conflict.

More importantly, the carrier battle group is the essential ingredient of naval power upon which our maritime strategy is based. It is the warfighting potential of this most potent force which is the major naval element in the war plans of the component commanders in the Atlantic, Pacific, and European theaters.

PLATFORM TO FULFILL THE MISSION

There exists today a substantial mismatch between our national strategy and the Navy's current force levels. As powerful as our carrier battle groups are, their current number provides insufficient warfighting capacity, particularly in the area of sea-based tactical air, to fulfill today's worldwide commitments. In order to reduce this mismatch, the Navy requires additional ships and, most specifically, additional platforms (carriers) on which to base its tactical air power in order to provide the full range of capability in the four dimensions of subsurface, surface, land, and air warfare. These platforms must be able to carry an offensive punch to the forward areas of all the oceans and defend against existing and projected threats. They must possess maximum sustainability by providing sufficient fuel, ammunition, parts, maintenance and subsistence for the platform and the embarked aircraft. They must be both flexible and versatile, capable of altering weapon systems to meet the threat.

Since these platforms will constitute a sizeable portion of our naval power, their survivability is of paramount concern. To this end, the synergistic effect of the accompanying escorts and other units in direct support, coupled with the self-contained carrier based tactical airpower, provides a most credible, defensive posture. Individual survivability can be further enhanced through incorporation of point defense weapons systems, armor, magazine ballistic and torpedo protection, and extensive damage control features. Additionally, through minimum dependence on restrictive logistic resupply evolutions, the carrier battle group can execute extended high speed operations that provide additional options to exploit the protection of the ocean's expanse such as taking advantage of weather and, when warranted, out-running certain threats. Most importantly, the multi-faceted offensive punch of the carrier battle group allows it to go in harm's way and to defeat the potential enemy's striking power.

These sea based TACAIR platforms should also minimize operating costs through the most efficient use of manpower and base operating support facilities. In addition, they must be able to conduct all phases of operations with the greatest margin of safety in high sea states and adverse weather conditions.

These desired platform characteristics are best obtained in the large deck nuclear carrier. Large deck carriers of the *Forrestal* and *Nimitz* classes, contrary to popular conjecture, are the most difficult to sink or disable. Their construction, enhanced by armed decks and sides, and extensive compartmentation, makes them significantly more survivable than other surface ships. Carriers, when compared to foreign land bases, are neither vulnerable to political whim nor guerilla attacks, and their inherent mobility makes the enemy's targeting and weaponeering tasks markedly more difficult.

Extensive study and analyses of the type and size of platform needed to fulfill the Navy's requirement has consistently revealed that the *Nimitz* class carrier is the best platform we can build upon which to base tactical air power at sea. We have seriously examined more than 45 designs for small carriers, both as an alternative and as an augment to our large deck carriers. There is no question that during periods of national emergency, appropriately configured smaller carriers could provide a useful augmentation to the large carrier battle groups. In addition, smaller, less capable carrier could be utilized individually in low threat scenarios where the total warfighting capability of a large deck carrier would not be required. However, when compared to a smaller platform in the 40,000 ton range, the synergistic effect of the multi-mission, full range of warfighting capability provided by the large deck carrier and its airwing reveals significant advantages over that available in the smaller deck. From the standpoint of warfighting effectiveness, operational suitability, surivivability, sustainability and costs, the *Nimitz* class carrier provides the best return on our investment.

The addition of nuclear power provides the big deck carrier with an unequaled capacity to meet the critical operational characteristics of sustainability, rapid response, high speed and overall mobility. The inherent capabilities of nuclear power in these vital areas cannot be duplicated by any other type of propulsion system. Based on a thirty-year life cycle, the cost of a CVN is roughly equal to that of a conventionally powered aircraft carrier of similar size. However, beyond thirty years, the balance clearly favors the CVN. I would like to point out here that we are currently planning a 45 year service life for our existing carrier force through the service life extension program (SLEP) and will continue this type of program into the foreseeable future.

This Nation has neither the desire, nor the assets, to conduct a war of attrition with any potential enemy. Our naval tactics are based on the utilization of a tremendous range and depth of offensive and defensive power—coupled with the use of concealment, surprise, and freedom of action—to project the necessary force to win a war at sea. Against a modern threat, the carrier battle group, with its centroid being the large deck CVN, best executes these tactics.

FORCE LEVEL

Based on national planning estimates, analysis, studies, and real-world operational experience, and coupled with the realities of affordability and attainability, the CNO has determined that fifteen deployable carrier battle groups are essential to say again with confidence that we have attained maritime superiority. With the commissioning of the U.S.S. *Carl Vinson* (CVN 70) this month, the United States will have thirteen deployable carriers.

The arrival of the already authorized U.S.S. *Theodore Roosevelt* (CVN 71) in December 1986 will provide the Navy with the fourteen deployable deck by late 1987. In order to achieve the goal of fifteen deployable carriers, we must accomplish the following actions: (1) Extend the service life of *Midway* and *Coral Sea*; (2) continue the service life extension program (SLEP) of the *Forrestal* class and subsequent carriers; and (3) execute the CVN construction plan. Our current program includes accomplishment of all of these initiatives.

Additionally, we plan to augment our sea based tactical air through the provision of a convertible multi-mission capability in our new amphibious assault ship, the LHD 1. We also plan to continue the use of our existing LHA and LPH's as sea based platforms for Marine Corps AV-8 Harriers. Thus we intend to move forward on two fronts—

First, acquire CVN 72 and 73 in order to proceed toward Navy's goal of obtaining fifteen large deck carrier battle groups.

Second, develop the LHD-1 as a multi-mission platform capable of supplying TACAIR augumentation when needed.

ACQUISITION

The best method of acquiring CVN 72 and 73 is the one the President recommends—to fully fund the two ships in fiscal year 1983. This bold strategy permits the purchase of two ship sets of equipment and serial fabrication of major assemblies, and is aimed at assuring the most economic, efficient and rapid means of obtaining two new *Nimitz* class carriers.

The fully funded two-ship procurement plan provides two major advantages: First, the increased productivity, made possible by improved planning, scheduling and facility utilization, will deliver each ship twenty-two months earlier and provide significant cost savings because of: reduced escalation from earlier delivery, economical order quantity savings from multiple ship set buys, reduction of start-up, set-up and other nonrecurring costs, improved planning, manpower utilization and productivity.

Second, the improvement in vendor continuity, and reduction of production gaps at the prime and subcontractor levels, will provide a stronger industrial base.

CONCLUSION

In conclusion, the vital role of sea-based tactical air will continue into the foreseeable future and may increase as Western dependence on the sea for energy, raw materials and commerce grows.

The single action of fully funding two nuclear carriers in fiscal year 1983 will not provide the Navy fifteen deployable carriers in this decade; however, it will bring us much closer to our goal, provide each of these needed carriers almost two years earlier, and will strengthen our industrial base.

I believe this proposed approach is in the spirit of the congressional resolution which calls for a 600-ship Navy fully capable of being used as a major instrument of foreign policy.

These two large deck, nuclear powered aircraft carriers are at the core of the Navy's balanced expansion program to meet this goal.

Admiral **McDonald**. With your permission, sir, Rear Adm. E. J. Hogan, who is my Director for Carrier Programs, and is my single point of contact in all matters relating to aircraft carriers, will make the presentation this morning in the format that we have discussed. I would like to introuce Rear Adm. E. J. Hogan.

Admiral **Hogan**. Thank you, Senator. I am going to give you very briefly a program overview of the carriers. I have been in this job for 3½ years. The last 2 years I have been intimately involved with looking at the various ways to base our tactical aircraft at sea.

The organization will be, in this brief background or overview, the current actions, particularly stressing the designs that we have examined, ending up with the Navy view and our proposed direction.

National strategy military objectives; war fighting needs; sea based air power.

Currently have a mismatch between strategy and force levels.

Carrier force driven down to 12 deployable decks—10 full range big decks and *Coral Sea* and *Midway*.

Soviet's naval gowth dramatic.

To give sort of a framework in which to view this, we want to look first at the top requirements for the force. I just want to put this in perspective; we are over here testifying to a national requirement. It is not the Navy's requirement; it is the Nation's. It is developed from our national strategy and objectives that go with it.

We are looking at war fighting needs and this particular hearing and this particular testimony is concerned with sea-based air power. The requirements that have been generated through the CINC's look at our war plans at the strategy we are trying to fulfill give us sort of a benchmark upon which to base our program.

At this current time and over the past several years, we have had a mismatch between the strategy and the force levels, particularly when they apply to sea-based tactical air and the aircraft carrier program. Carrier force levels have been driven down to 12 deployable decks. Ten of these are large deck *Forrestal* class, *Enterprise* class, and of course the new *Nimitz* class. The full range big decks, and *Coral Sea* and *Midway* out of the Second World War.

I might add that last Saturday we started an upward swing with the delivery of *Carl Vinson*, which will become our 13th deployable deck as we work our way through this in the next several months.

While our force levels have been drifting downward, the Soviet naval growth has been dramatic, and we presented that testimony earlier.

Admiral McDonald. May I interrupt for just a moment and clarify one thing? Admiral Hogan is talking to 13 deployable decks. That is in no way implying that there is not another carrier. One is in the SLEP program, the service life extension program. So with the introduction of *Vinsion* commissioning into the fleet last Saturday, there are 13 deployable carriers, 1 in SLEP, which is 14, and 1 training carrier, which make it 15 carriers physically in the U.S. Navy. One is not available for service, though, since it is undergoing a very extensive overhaul for 28 months at Philadelphia, as I am sure you are aware.

Senator Byrd. That clarification is helpful because the chart did not indicate that.

SIZE

FORCE

STRUCTURE

CAPABILITY AND MIX
OF TACTICAL AND SUPPORT
AIRCRAFT

- 15 CV BATTLE GROUPS REQUIRED TO SUPPORT NATIONAL STRATEGY
- LARGE DECK CV + MULTIMISSION SEA BASED TACAIR AT CORE OF CVBG WAR-FIGHTING CAPABILITY
- AUGMENTED BY OFFENSIVE/DEFENSIVE PUNCH OF DISTRIBUTED FORCES:
  - SEA BASED SSMs (TOMAHAWK, HARPOON)
  - AAW/ASW ESCORTS (AEGIS, LAMPS)
  - SSNs DIRECT/INDIRECT SUPPORT
  - USMC AND NAVY V/STOL IN LHA/LPH/LHDX

Admiral Hogan. That was a little bit of a top down view. If we look at it from where we are and how we get there or what is the incremental approach we are trying to take, the programmatic approach, we are trying to provide the force size structure and mix to provide the best tactical airplane basing structure and put the right kind of airplanes in that structure.

Now over time, since the Second World War, when we came out of the second World War, we came out with some 25 carriers, which at that time were light carriers, were task-dedicated carriers, and as we have come through the 1950's and the 1960's and the 1970's, we have shrunk in size down to 15 and the dimensions of the individual ships have increased, not only to accommodate the additional performance characteristics associated with the airplanes that are there but also to provide the sustainability, supportability, survivability that we need in these big ships.

We believe the Navy program is a balanced program. It not only includes carriers but also includes submarines, small surface combatants and the like, and reactivation of the battleship. It is the best mix that we need as we move toward our 600 ship Navy. We believe that the large deck CV and the multimission airwing on it is the best thing we know how to put to sea to meet the requirement.

This force does not stand alone. It is augmented by the distributed forces of many of our surface ships. We are investing very heavily in sea-based surface-to-surface missiles with the Tomahawk and the Harpoon. We are basing a lot of additional airplanes on smaller ships—the Lamps helicopters in particular—and of course we are providing the new Aegis system in antiair warfare.

We have numerous ASW platforms and we are trying to build this force to about 100 submarines in direct and indirect support of the battle group, an addition we will develop later. We are trying to use our existing LHA and LPH assests and the new LHD development, to use those platforms to augment our tactical air through use of Marine Corps assets, when they are available, in a sea control type of role.

We have not stood idly by. We have examined numerous combinations of basing structure for CTOL, VSTOL and mixed operations. We have taken a hard look at it. I personally have spent a lot of time looking at every choice that we might have, in combination, to do these operations.

We based the characteristics of our judgments on these particular parameters: war-fighting effectiveness primarily, operational suitability, which includes safety of operations. The cost is most important. They have to be affordable and they have to be attainable. Survivability—the ships must be able to take the hits and must have a defensive posture to prevent them from getting hit in the first place. Sustainability they must be able to live at sea and remain at sea and go in harm's way.

RELEVANT STUDIES

CVNX—1976.
VSS—1976-1978.
Sea based air platform—1978-79.
Sea based air master plan—1979-1981.
CVL concept feasibility—1979-1980.
CVX design reviews.
Alternative battle group concepts—1979-1981.
CNA distributed force concepts—1980.
CNA alternative sea-based air forces—1980.

We have conducted numerous studies that you have all been presented with over time, starting back in the mid 1970's. I have reviewed all these. We have done different sensitivity analyses. We have looked at this thing over and over again. We have brought in outside people and have taken a real hard look at whether we really are moving in the right direction. This is just a listing of the studies.

The current actions, and we will get into the meat I think of what you want to see here, with the design reviews, and that is what we will focus on. In addition, we have done some hardware support development in trying to improve the facilities on these ships.

CV VARIABLES

Supported air wing [deleted] aircraft.
Flight deck config, angled vs. axial.
Aircraft launch, ski jump/catapult.
Propulsion, gas turb./steam/nuclear.
Speed, [deleted] knots.
Passive protection, [deleted] over 45 total configurations.

The variables that we have looked at are across the board from a small to a large supported air wing, different configurations on the flight deck, different launch capabilities, ski jump and catapult in particular, different propulsion schemes, different speed ranges, but again, up in this range in which you need to operate airplanes, passive protection from the minimum that we have in existing ships to the full protection that we are providing in CVN-71. And overall, we have looked at 45 total configurations. We have done this in a computer-based orientation, trying to iterate different things, trying to get the total configurations to give us the best ship.

Here is a listing of some of those, and I am starting at the low end of the scale in terms of dimensions and I will be building up. I will show you two slides. [slides deleted].

The first slide contains two of the ships that I will discuss in a little more detail: The LHD-1, which we are in the budget to try to procure with long lead money, and study number 45, which we believe if you are going to build a light carrier, this is the best one in the 40,000 ton range, to build. We do not recommend it, but feel that this is the best balanced ship in a light carrier mode to operate today's airplanes.

I will just go down and briefly summarize. At the top here, is really the capacity of the ship as measured in the number of A-7's. We use that as a unity number, and we compare the dimensions of other airplanes to that. These are the numbers of airplanes that we talk about supporting. These first two ships are VSTOL only ships. The kinds of flight deck configurations that we might have—straight deck which has no conventional takeoff and landing capability; a straight deck ship that has that; catapults, displacement modes across up here; length—the different propulsion options, the shaft horsepower required; the speeds we get; the magazine protection; and finally, the bottom line cost, which in most cases are class Foxtrot estimates except for the LHD-1 which is still, under heavy design review.

Senator HART. There seems to be no real difference between study 26 and study 45 except the cost.

Admiral HOGAN. Yes, sir. Actually, that is a good point. Study 45 is really a derivative of 26. As we developed this over time, and we have built on it, we tried to examine the best mix of capability, the best balance; the most sea-worthy. You will notice it is a little bit wider in the beam. It is about the same length. We put a different mix of aircraft support facilities in there, more ordnance and balanced the internal configuration. That is really what we did .

We tried to do this—we looked to do this, if you will, to operate, which I will show in a minute, a balanced airwing that would give us heavy ASW support because we really are concerned with the submarine threat, along with the traditional tactical airstrike fighter support.

So we balanced the ship in that way. Again, could it be changed? Yes, sir.

Senator HART. But all that added up to $300 million, all that balance?

Admiral HOGAN. Yes, sir. Again, these are class F estimates, I think, and I will have to let the shipbuilders speak a little more to this, but I think that I would not guarantee that is a plus or minus 40 percent, when you are talking class F.

Admiral FOWLER. I think the relative numbers are good. The absolute estimate is not that firm at this point in the design. But I get the import of your question to imply that you do not see the extra military capability that you are getting. I think what Admiral Hogan is saying is we have put more military capability in that ship, causing it to cost a little bit more, but on a bang for the buck basis you are getting more offensive capability than you would in the design number 26.

Admiral HOGAN. We are talking about putting the [deleted] catapult in there that would give us [deleted] the [deleted] arresting gear if we developed it, or the [deleted] so we could land the kinds of airplanes that we expect to operate in the conventional mode that we have in the next 20 years. And of course, as are all these ships, it is capable of operating VSTOL airplanes just as well.

So these are the smaller versions of that and I will give you some plan views of these ships.

Senator COHEN. What is the basic difference between 45 and 26?

Admiral HOGAN. It was primarily just a provision of a more balanced ship in terms of support capabilities to support the airwing we have notionally placed on there, a balanced airwing in terms of ordnance and fuel, and also seaworthiness to a degree—in this case here, a wider beam. It does not seem like much, but it is. And then a deck configuration that will allow us to get the [deleted] catapults and the [deleted] or a [deleted] arresting gear that would give us the best match to the airplanes we are going to operate in the facility. Also, to give the parking area and the aircraft handling space that we have to work with in the operational side.

Again, it is a design. Could it be modified? Yes, sir, at this time it could be.

Senator COHEN. Are the catapults the same for 26 and 45? What is the difference?

Admiral HOGAN. I do not believe they are. I believe that 45 has the [deleted] one, which is our [deleted]. I would have to defer to my memory to be sure on 26, but I believe it is a [deleted].

Admiral FOWLER. It is the same catapult.

Admiral HOGAN. As we move up the scale on these ships, we looked at two studies, and because it is the direction of the Congress, because we are building a ship this large, we looked at a nuclear variance of the small carrier. It was sized bigger because we put the nuclear powerplant in there. That is study 42 and 42N, so you can get a comparison of the bottom lines on these ships.

We also included for reference the CVV, which is moving us up into the midsize ship, if you will, and was a submission in the 1980 budget.

We also provided for comparison purposes a modified *Kennedy,* which we have looked at in the 80 and 81 timeframe, as an alternate to the nuclear carrier, and its dimensions and sizes.

Senator COHEN. What is the difference between the CVV and the *Kennedy* that you mentioned?

Admiral HOGAN. The basic difference is size. The two-shaft or two-catapult ship, was the minimum size ship, and I might as well get into this. Really, we looked at trying to get the smallest possible carrier, and you come on down to somewhere in this range, the 40,000 ton range. This is a little heavier. You get down into that range and then we said OK, let us put the [deleted] protection on that ship. That ship rose to roughly 56,000 tons.

If we take that and then balance it to give us the best support capability, we grow up to roughly the 62,000 ton number. Then, if you want to make a comparison between that ship and a conventionally powered wider deck carrier, you could make that. And what are the deltas here? When you look at these you say, for a little bit more, we could go to that big ship.

When you get up above 60,000 tons and the return to get those extra tons is not that great, the cost is not that great; then when you get up to this size you would say what does nuclear power buy me? And when you start driving a ship this large, in these dimensions, through the ocean with four shafts, with that power requirement, over time nuclear power starts to make a lot of sense.

And that is really what our balanced program is. We have nuclear power in our submarines to make them truly submersibles, and we have them in the big deck carrier, where it really pays off.

Senator BYRD. Let me see if I understood what you said earlier. If we go to the smaller carrier, it is the Navy's view that study 45 is the carrier we should go to, namely 44,000 tons.

Admiral HOGAN. Yes, sir, in the 40,000 ton range.

Senator BYRD. Now if you put the other chart back——

Admiral HOGAN. [Deleted.] When you get up to that range of ship, you want to build a bigger ship. How do we want to reconfigure it? How do we want to make it the best ship, still two catapults and still two screws propelling it through the water, so, in fact, you add a little more weight to it.

I might add that these ships, when delivered—*Forrestal* is a good example—were delivered roughtly at 56,000 tons. She now sails around the ocean at somewhere in the 80,000 ton range, so there was tremendous growth in those ships. The new ships that we are delivering, we have eaten up most of that growth. I do not see the *Nimitz* class growing by a third like our earlier ships did. This is true in the smaller carriers. The 27 *Charlie* class was initially a 27,000 ton ship that we grew to 47,000 but the capacity was there.

This is the profile view [chart deleted] of study No. 45 with those same sorts of dimensions displayed again. And again I want to say this is a design study and it is one where we tried to decide what was best when looking at the operational capabilities and capabilities of the shipbuilder. The crew in the ship is roughly in these dimensions here—[deleted] for the ship, and of course the embarked airwing.

Profile view, which I think you would probably be interested in, the mix of airplane we are putting on here. Again, we want to give it a full range of capability, although it is a small deck. We are putting some airborne early warning airplanes on there. They are big airplanes. They take up real estate. There are [deleted] of those, which is about the minimum number you need to operate. We are putting a total of [deleted] S-3's on there for our ASW concern but in addition to SH60-B's. We are also placing [deleted] F/A-18's on there and we are using the versatility of this great airplane to give us the fighter and attack capability we have.

Could we substitute these? Could we put F-14's on there? Yes, we could, but you are not going to get as many on there as you would the F/A-18 and so forth.

Now the parameters of the ship are designed—we are designing them not only for the catapult configuration, to get them off, and the arresting gear to provide the energy absorption to land them, but also to give them the safety margins and the balance on the angle, and to provide parking space and the like for the embarked air wings.

Could you put more airplanes than [deleted] on here? Yes, you could if you used different kinds of airplanes.

Senator HART. What if you make it an ASW, essentially an ASW carrier? What kind of aircraft and how many?

Admiral HOGAN. Well, it is about a [deleted] deck spotting trade off. If you wanted to exchange F/A-18's for S-3's, for instance, [deleted] it is about [deleted] number. So you take off [deleted] F/A-18's and put [deleted] S-3's in their place.

Senator HART. Helicopters?

Admiral HOGAN. And helicopters, you could up those numbers the same way, yes, sir, if you had the SH-60 variant. If you get it further on V/STOL airplanes, of course they would fit on there. So there is no question that this ship could do that with the capacity that it has.

Again, we do not feel it has enough capacity to get the same number of airplanes placed at sea. This particular concept could cost you more.

Senator COHEN. Why have you eliminated the ski jump altogether in your considerations?

Admiral HOGAN. Some of the earlier designs—in fact, that one study I showed previously did have a ski jump and arresting gear arrangement. But as far as conventional airplanes are concerned, and the things you might do with that, we are still a little uncertain. We are still conducting tests at Patuxent on that, but there is an uncertainty of going ballistic off the front end of those ships.

It is interesting enough when you are strapped on the catapult to go off there, but the ballistic trajectory with a conventional airplane is maybe a little more interesting.

Admiral MCDONALD. Mr. Chairman, we are working right now at Patuxent. We last year tested with a fixed ramp of three degrees. We are working in six and nine degrees now in a constructed ramp to work T-2's and F-14's. We will eventually get to testing the F/A-18 off the ski jump. Right now we are going to do that at Patuxent.

In the future we are looking at putting a portable ski jump aboard one of our carriers. It is, as Admiral Hogan says, a rather sporty case right now with airplanes we have in the inventory. But that certainly is an option that we are pursuing, to see whether we could use that for STOL, even with the AV-8B as operating on carriers such as LHD-1 will be one of the things we will be talking to later in a conversion role. If you put a ski jump on that type of ship, you increase the load-carrying capability for the airplane, as long as you can roll it for takeoff, rather than have to have it vertically lift. And I am sure that is one of the enhancements we are looking to.

Senator COHEN. Senator Hart?

Senator HART. I would hope eventually, Mr. Chairman, we could discuss this in open session. Because of my advocacy of this approach, I get a lot of questions about what kind of carriers we are talking about. I really do not seen anything really secret here, but we can discuss that.

How many aircraft could you get on the 26 study?

Admiral HOGAN. I do not have that off the top of my head.

Admiral McDONALD. [Deleted.]

Admiral HOGAN. And Senator, if you look at the top line, the capacity depends on what kind of mix of airplanes you really want to put on there. And when you look at that, we do this up at Lakehurst. We do it on a big drawingboard up there, worrying about the flow of airplanes out of the hangar deck into the flight deck and keeping the deck clear and those things.

Senator HART. My point is this: How many of these carriers we can afford versus a *Nimitz*. And dollar for dollar, you are in about a 2-for-1 ratio with the 45 study carrier versus a *Nimitz*. So if you compare numbers of aircraft on a *Nimitz* with [deleted] the numbers on this, you are still short, in terms of just gross volumes of aircraft. However, you get closer to a [deleted] ratio with the cost of the 26 study carrier to the *Nimitz*, and if you [deleted] the number of aircraft on one of those, you are very close to a [deleted] ratio in terms of the number of aircraft you can put to sea, right?

Admiral HOGAN. I am not sure you can do that latter thing, that you can actually do the [deleted] that you mentioned. If you built smaller airplanes——

Senator HART. No, no, no. You are closer to being able to afford [deleted] aircraft carriers of the 26 study size and cost for the price of one *Nimitz*. And therefore, in comparing the number of aircraft at sea on a *Nimitz* versus [deleted] the number on a 26 study carrier—do you see what I am saying?

Admiral HOGAN. Yes, sir.

Senator HART. If your concern is to get aircraft to sea, one of the arguments against the small aircraft carrier is that you put fewer aircraft to sea, and if you use the 45 size aircraft carrier, you are still short dollar for dollar in terms of number of aircraft.

Admiral HOGAN. Right.

Senator HART. So if you go to the 26 study, you are very close to the same number of aircraft for the same dollars.

Admiral McDONALD. Senator, may I inject into this that we have looked at that and I think we have a backup slide that may show some of those cost curves as to what falls out.

The thing that we feel uncomfortable about is you are sacrificing capabilities when you do that. When you make that an ASW carrier, that is what you have, an ASW carrier. You no longer have the synergistic effect, and that is a buzzword, but it really is what happens to an airwing, the multidimensional airwing that can operate in four dimensions and does ASW as well as doing sea control, as well as doing power projection, antiair warfare, ASW and strike warfare.

The thing that I am worried about is going to a CVS, if you will, which is where we were at the end of World War II in the mid-1950's, and then because of affordability reasons, we went to the big multidimensional airwing big deck carrier, to provide those kinds of capabilities, based again on affordability reasons.

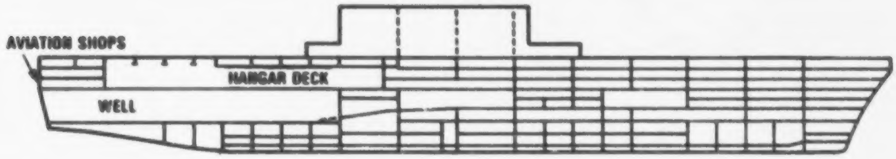
So we understand your concern relative to the ASW threat, and it is a major threat.

Senator COHEN. Could we move on to the specific designs? Frankly, we can discuss all of this in open session if we just do not refer to the specific items in study No. 45. We understand what they entail. I think we can ask questions in open session without violating any rules.

Essentially, I think the issue we have come to examine is the question of what do you get with the smaller carrier versus the larger one. What do you get with two or three smaller carriers versus the one larger one, not only in terms of numbers but in terms of ordnance, fuel, vulnerability, and most importantly, mission? I think some questions can be raised. Can you have a less capable, more vulnerable light carrier in a lower threat area? Does it have to be used for power projection or can it be used for sea lane control?

And I think all of those we can discuss philosophically without getting into the specific designs, as long as all the members have their copies of the designs. If you have any more material you would like to show, we should review it now.

LHD-1 INBOARD PROFILE



CHARACTERISTICS

LOA (FT)	820
BEAM (WL) (FT)	106
DRAFT (FT)	26
DISPL (TONS)	40,000
PROPULSION	STEAM
TROOPS	1,800
LCAC	
AIRCRAFT	

PRIMARY MISSION
(AMPHIBIOUS)

CONVERTIBLE MISSION
(SEA CONTROL/STRIKE)

Admiral HOGAN. Well, we will just show you the LHD-1 profile and point out that it is convertible. It is a 40,000 ton ship. It will give you the capability in the tactical air, and if we put the SH-60 on there, it augments the ASW role.

This is just a layout of the plan view [chart deleted], which is how we would base the amphibious mission on that ship, and the kinds of airplanes that would be there supporting one Marine assault unit. This ship would be primarily an amphibious ship that would be convertible to the tactical air role and be able to do the sea control mission, if you will, within the constrains of the airplanes we can put on there.

Senator COHEN. If I understand correctly, this ship would carry LCAC?

Admiral HOGAN. Yes, sir.

Senator COHEN. Those yellow objects are helicopters?

Admiral HOGAN. That is right.

Senator COHEN. And you would also have your troops?

Admiral **Hogan**. Yes, 1,800. The same that the LHA has. This is a derivative of the LHA [chart deleted] that accommodates the warfighting capability of the tactical air side better.

Senator **Cohen**. What aircraft? The 14's or 18's or AV-8B's?

Admiral **Hogan**. The AV-8B's. This is V/STOL only. There are no catapults. It is a V/STOL ship, 40,000 ton ship with the convertible mission.

Senator **Stennis**. May I ask just one question? Just compare that briefly with the Russian comparable carrier, the LHD one.

Admiral **Hogan**. The *Kiev,* yes, sir. Well, I cannot give you a straight comparison.

Senator **Stennis**. Just approximately.

Admiral **Hogan**. This is a dual mission ship that does have that solid amphibious capability. It also has the ability to convert into this tactical air capability. It does not have the missile systems and some of the other things that are on the Kiev, but as a platform it actually can operate more airplanes. It is better configured to do that.

We believe that when we are building ships of this size in this range, that we have to put the most capability on them that we can. That is why we are coming out of the task-dedicated mode on the amphibious side into this convertible mission area.

Finally, these are the parameters [chart deleted], and I will not go into great detail on these, of the CVN-72, the first lead ship of the two are requesting in this budget, and the dimensions and the like. And they are available to discuss.

This is the plan view of the same thing. It is a big ship. It is a strong ship.

BOTTOM LINE - NAVY VIEW

- VSTOL PROVIDES MORE DISTRIBUTED FORCE, BUT RESULTS IN:
    - LESS CAPABLE AIRCRAFT BASED FROM MORE NUMEROUS BUT LESS SURVIVABLE PLATFORMS
- 44,000 TON CVX SMALLEST PLATFORM FOR CURRENT CTOL AND CTOL/VSTOL MIX. LATEST SELF-PROTECTION CAUSES GROWTH TO 56,000 TONS
- NIMITZ CLASS BEST BASE FOR FULL RANGE CTOL AND/OR VSTOL
- MAJOR ARGUMENT AGAINST CVN:
    - UP FRONT PROCUREMENT COSTS
    - CONCENTRATION OF ASSETS IN FEWER, MORE COSTLY PLATFORMS

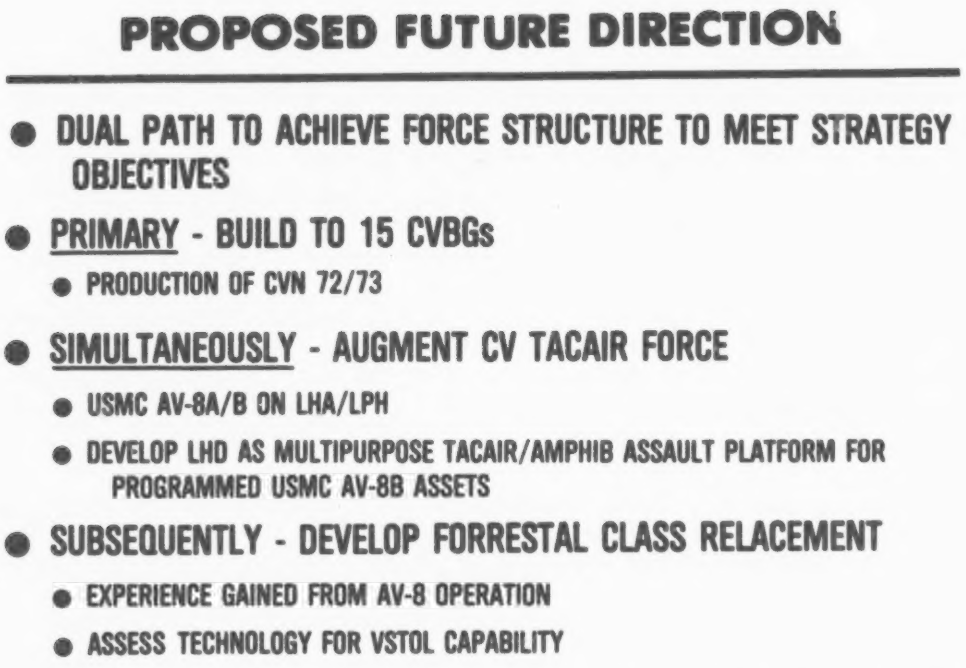
BUT

- CONCENTRATION OF POWER OFFERS:
    - TACTICAL ADVANTAGE
    - ECONOMIES OF SCALE
    - SURVIVABILITY
- LARGE DECK CV - FULL UP, MULTIMISSION CAPABILITY
    - MOST USEFUL, MOST USED INSTRUMENT OF NATIONAL POWER OVER PAST SEVERAL DECADES.

To get to where we are and what we have tried to arrive at is a bottom line that we agree that V/STOL provides more distributed force, but results in the current technology in less capable aircraft based from more numerous but less survivable platforms. If you build a 44,000-ton CV, in that range, and add all the protection to it, you are going to grow to 56,000 tons.

The *Nimitz* class is the best base for the airplanes that we operate and expect to operate in the foreseeable future.

The major argument against the CVN, there is no question about it, the up-front procurement cost in terms of TOA, the concentration of assets in fewer and more costly platforms. But we believe the trade off here in terms of tactical advantage, economies of scale and survivability, favor the *Nimitz*. The full multimission synergistic airwing we have on those ships gives us the edge we need to win a war at sea.



PROPOSED FUTURE DIRECTION

- DUAL PATH TO ACHIEVE FORCE STRUCTURE TO MEET STRATEGY OBJECTIVES
- PRIMARY - BUILD TO 15 CVBGs
  - PRODUCTION OF CVN 72/73
- SIMULTANEOUSLY - AUGMENT CV TACAIR FORCE
  - USMC AV-8A/B ON LHA/LPH
  - DEVELOP LHD AS MULTIPURPOSE TACAIR/AMPHIB ASSAULT PLATFORM FOR PROGRAMMED USMC AV-8B ASSETS
- SUBSEQUENTLY - DEVELOP FORRESTAL CLASS RELACEMENT
  - EXPERIENCE GAINED FROM AV-8 OPERATION
  - ASSESS TECHNOLOGY FOR VSTOL CAPABILITY

The proposed future direction that we have in this budget is the dual path, primarily build to the 15 CVBG's that we are coming in with the up-front procurement request to the Congress for CVN-72 and 73, and I am going to explain that in the next part when we open it, why we are doing it this way. Simultaneously we want to augment that force with a light carrier type, using existing LHA's and LPH's to operate the existing Marine airplanes we have up here and develop the LHD as a derivative of that LHA. And from a keel-up capability to operate those tactical airplanes.

And subsequently, as we move through this decade, take the lessons learned up here and look to what is the best ship to build for our Forrestal replacement at the turn of the century.

Thank you.

Senator COHEN. Thank you very much.

Admiral McDonald, is there any reason why——

Senator HART. Mr. Chairman, what did I just hear? At the turn of the century?

Admiral HOGAN. If we extend the *Forrestal* class, she will last to the year 2000, and that is when we need replacement for our first big deck carrier, roughly the year 2000.

So again, what we are trying to say is, we want to move in both these directions and look to see what the V/STOL development and technology produces and if in fact we can package a difference basing structure, we certainly should do it.

Senator COHEN. But the question is, do you wait until the year 2000?

Admiral HOGAN. We are moving in that direction now. Really the studies that you have urged on us, Senator Hart, are pushing us in that direction to get there.

Senator COHEN. He is just trying to push you a little harder.

Senator **Hart**. That is 20 years away.

Senator **Cohen**. Is there any reason why we cannot discuss—I cannot see any reason why we cannot discuss an analysis of the advantages and disadvantages in open session, which you have outlined.

Admiral **McDonald**. Nor can I, sir. As long as we do not have the slides on the screen, then there should not be any problem whatsover.

Senator **Cohen**. Then I would suggest that we go into open session. Just a moment.

Senator **Byrd**. Let me ask a question for clarification. You say that if the Congress were to go to a smaller carrier, that the 44,000-ton carrier would be the one that the Navy would recommend. But that does not carry with it the protection that the carrier needs. So actually you cannot go to a 44,000-ton carrier. You have to go to a 56,000-ton carrier.

Admiral **McDonald**. That is one way of looking at it, Senator Byrd. You could certainly argue as to whether you need to build in that kind of passive protection on the ship. You pay for that. You pay for it not only in ship tonnage; you also pay for it in dollars to afford that.

So that is the trade off that has to be made. [Deleted.] So that is something that would have to be directed and we would have to look at that.

Senator **Byrd**. You can discuss that in open session?

Admiral **McDonald**. Yes, sir, without getting into the details on passive protection.

Senator **Cohen**. Is there a quantum difference between the 40,000-ton LHD-1 and the 44,000-ton light carrier?

Admiral **McDonald**. Absolutely.

Senator **Cohen**. So it would be worth the difference to go beyond the LHD-1? It is going to perform a function in any event, but it is worth the difference if we are going to go into a light carrier to look at 44,000 tons in terms of offensive capability?

Admiral **McDonald**. We think that if you are going that direction, we really strongly recommend that you go with the big deck carrier which provides you with the total four-dimensional airwing and you are not saddled with the smaller reduced amount that the 44,000-ton ship will provide you.

We see that the 44,000-ton class, as an augment to the big deck carrier as you drive to the 15-carrier battle groups, is the way to for the future.

Senator **Cohen**. Let me ask it a different way. If this committee, or this Congress, insisted on building the 44,000-ton light carrier, would you still build LHD-1's?

Admiral **McDonald**. Yes, sir, I believe we would. We have the requirement for marine amphibious lift. I would defer that to Admiral Walters for further explanation.

Admiral **Walters**. Absolutely, Senator, because we are building LHD's for the amphibious role. While it has the convertible option, our primary need is for amphibious capability and the lift which it provides.

Senator **Byrd**. Can we discuss speed in open session?

Admiral **McDonald**. We will discuss it in round figures, if that is satisfactory with the committee. We will not get too specific.

Senator **Byrd**. Could we mention speed now?

Admiral **McDonald**. Yes, sir.

Senator **Byrd**. As I understand the 44,000-ton vessel, it has a speed of [deleted] and if you went to the 56,000 ton, what would that be?

Admiral **McDonald**. It would be about the same, Senator Byrd, because it is the same ship.

Senator **Byrd**. Then if you go to the 90,000-plus——

Admiral **McDonald**. You are talking about a ship of the *Vinson* class or *Nimitz* class, which is [deleted]. We are estimating about [deleted] for that. You have, of course, the four shafts when you get into that class that drive the ship through the water, as opposed to two shafts.

Senator **Byrd**. Is there not a larger difference than that [deleted] difference?

Admiral **Fowler**. The *Vinson* made [deleted] in her trial speed recently.

Senator **Cohen**. One final point. I am told that there is one other area of classified information; namely, a discussion of what do you get if you add passive protection.

Is that classified as far as you are concerned?

Admiral **McDonald**. Yes, sir, it is.

Senator **Cohen**. [Deleted.]

Admiral **McDonald**. [Deleted.]

Would you like to expand on that?

Admiral **Hogan**. I think the primary improvement is in the [deleted]. So we are trying to defeat that as well.

So that is the characteristics that Admiral McDonald explains that gives us that protection.

Senator **Cohen**. Well, I think we ought to go back into open session.

[Whereupon, at 10:57 a.m., the subcommittee went into open session.]

OPEN SESSION

Admiral **McDonald**. At your discretion, sir, we are prepared to continue or we will stop and go to questions at this phase of the briefing. As I say, we still have the presentation which we know you want to hear, relative to CVN-72/CVN-73.

Senator **Cohen**. Why do we not proceed with your presentation for the big-deck carrier and try to complete that no later than 11:15 so that the members can start asking questions.

Admiral **McDonald**. Yes, sir, we can do that.

Senator **Stennis**. Mr. Chairman, may I interject during this transition for just 1 minute? I want to refer to the commissioning last Saturday at Pascagoola of the fourth so-called Iranian destroyer. That was one of four destroyers contracted for by Iran. When the Shah left, they had paid the money but they did not want to continue the contract, and did not. And this committee authorized funds for those four destroyers, and the Budget Committee overruled the committee by surprise on the floor when our bill came up, then turned it over to the President of the United States and he overruled the Budget Committee, and the ships went in.

My point is that it was launched on Friday. The Navy is very happy about it. And "Jane's Fighting Ships" called it "the most powerful destroyer in the fleet." We are talking about that ship. And it has on it this additional capacity.

Senator **Cohen**. Thank goodness we have it and not the Iranians.

Senator **Stennis**. I thought it was something that the committee would be interested in knowing about. The judgment finally prevailed, and I think every member of the committee was satisfied with that judgment.

Admiral **McDonald**. Although I am here today to talk to aircraft carriers, we are most appreciative of the committee's efforts in the surface ships. We look very longingly at what is alongside with the carriers out there, Senator.

Senator **Stennis**. Well, they say it is almost equivalent to a cruiser, for example. One of the naval officers referred to it that way. I am very happy to share that with the committee members.

Senator **Hart**. Mr. Chairman, as I am sure you know, that is referred to in some circles in the Navy as the Ayatollah class.

Senator **Cohen**. Admiral, you may proceed.

CVN 72 AND 73

Admiral **McDonald**. Yes; may I have Admiral Hogan make the presentation.

Admiral **Hogan**. The multiship procurement program is a new program that enhances the delivery. We are trying to get these ships as soon as possible, so time is a factor, and also to reduce the cost.

CNV 72 /CVN 73 Multiship Acquisition, Potential Benefits, Fiscal Year 1983

Improved delivery (CVN 71, CVN 72, and CVN 73).
Significant savings from:
Earlier delivery—reduced escalation.
Reduction of production gaps—prime and sub.
Use of multiple shipset buys—CFE and GFE.
Reduction of nonrecurring engineering, planning, and grouping.
Improved planning and utilization of manpower.
Improved productivity.
Strengthen the defense industrial base:
Plant capacity/workforce at—shipyard prime contractor; equipment/material subcontractors.

These are the major potential benefits from this multiship procurement action we have on the way. Improved delivery, not only of 72 and 73 but also 71, through arrangements we already have in place. That improved delivery is time, and that is what we are trying to buy, in addition to getting them built.

There are significant savings from that earlier delivery, as a result of reduced production gaps, and the other parameters that we show here. In addition, we feel that this program will allow us to strengthen the defense industrial base to allow us to advance on the learning curve in our production procedures, and improve both the shipyard and the equipment subcontractor's capability to support the Nation.

IMPROVED DELIVERY
CVN-71, CVN-72, CVN-73

DELIVERY TO THE FLEET

SHIP	PROGRAM YEAR	TRADITIONAL DELIVERY	MULTISHIP EST DELIVERY	DELIVERY IMPROVED BY
CVN 71	1980	2/88	12/86	14 MOS
CVN 72	1984	10/91	12/89	22 MOS
CVN 73	1986	10/93	12/91	22 MOS
			TOTAL	58 MOS

Here is again what we feel is the most significant advantage—not the only, but the most significant advantage—the earlier delivery of these ships. With regard to CVN-71, we have a contract, although not related directly to CVN-72 and CVN-73, we have a contract in place to stimulate an earlier delivery of this ship. We have offered an incentive of some $21 million to the shipbuilder.

We feel that the series production of CVN-72 and CVN-73 will assist us in moving CVN-71 out earlier. Of course we are looking at these kinds of savings in CVN-72 and CVN-73 in terms of time of delivery, equating to approximate 5 carrier years, if you will, of usable time within the latter part of this decade.

This is the multiship delivery plan to show for CVN-71, with the target date and the contract delivery and the target date moving back, and of course, the profiles for CVN-72 and CVN-73.

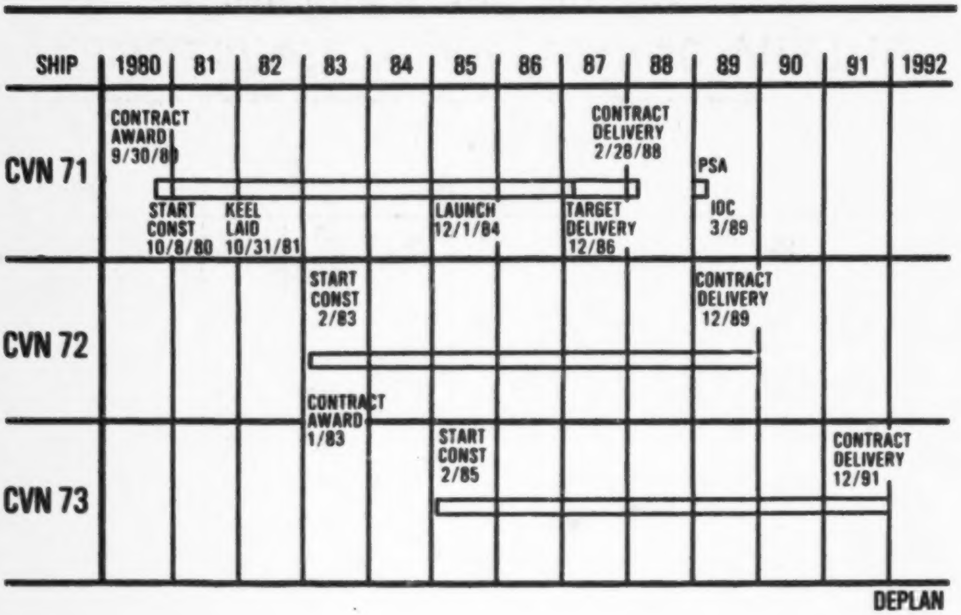
Senator BYRD. The 71, is that the *Theodore Roosevelt?*

Admiral HOGAN. Yes, sir. That is the *Teddy Roosevelt.*

These are the milestones on CVN-71 that demonstrate a tremendous improvement in productivity as we move on in the development of that ship. We are confident that the contractor can meet the accelerated delivery that we have shown.

We have the contract schedule and the target schedule that we are shooting for for our incentive program. The delivery of the *Vinson* last Saturday, 1 month earlier and $20 million under cost, helped give us more confidence that Newport News can participate in our program.

CVN MULTISHIP DELIVERY PLAN



CVN 71 MILESTONES

MILESTONES	CVN 71
CONTRACT AWARD	9/30/80(A)
START CONSTRUCTION	10/8/80(A)
LAY KEEL	10/31/81(A)
LAUNCH	12/1/84
COMPLETE ACCEPTANCE TRIAL	1/88

		TARGET SKED
CONTRACT DELIVERY DATE	2/88	12/86
COMPLETE FINAL CONTRACT TRIAL	8/88	6/87
POST SHAKEDOWN AVAILABILITY	10/88-1/89	8/87-11/87
INITITAL OPERATING CAPABILITY	3/89	1/88

(A) ACTUAL DATE

FY 1983

CVN 72/73 MULTISHIP ACQUISITION POTENTIAL SAVINGS - ANNUAL VS MULTISHIP

($ MILLIONS)

FISCAL YEAR	82	83	84	85	86	87	TOTAL
ANNUAL PROPOSAL (1)	475 (2)	583	3056	945	2965	–	8,024
CVN 72/73 MULTISHIP	475	6,795	–	–	–	–	7,270
SAVINGS	–	(6,212)	3056	945	2965	–	754

(1) BASED UPON A FULL FUNDED PROGRAM WITH CVN-72 IN FY 84 AND CVN 73 IN FY 86

(2) NUCLEAR LONG LEAD ADVANCE PROCUREMENT (CVN 72)

Now this is an important slide which really shows the authorization authority and the TOA. It shows what the differences are. It shows the savings here, that we expect to derive from the multiship procurement action versus the annual proposal, as noted here.

Senator COHEN. What would be the difference, in terms of cost, if you have one aircraft carrier and one long lead?

Admiral HOGAN. If you are going to build two, it would almost amount to this, if you were able to get into a commitment to do that. If you were only going to build one, it would be an increase in cost that we are not able to address at this time.

Admiral MCDONALD. Mr. Chairman, I think in answer to your question, the top line depicts if you authorize one at this time with one coming down the line later, with authorization to take place in 1985. We would be looking at the top line up there. Otherwise, you are looking to the multiship proposal and that is where we are deriving these savings, in the multiship series authorization, coming up with $754 million.

If you include the savings that we think are attainable in CVN-71, the *Roosevelt,* by bringing her out earlier, by ensuring the Newport News naval shipyard that a commitment has been made, there is a possibility of about $74 million that we estimate would accrue.

So you can come up with a figure that is higher than $800 million in savings on the three carriers.

Senator COHEN. I was asking what happens if you authorize one, fully fund one, and you have long lead for the second? Is there any difference in those figures?

Admiral McDONALD. It is represented by the top line, sir.

Admiral HOGAN. What we are doing here is making a commitment to the shipbuilder.

Senator BYRD. You say you would save $74 million on the *Theodore Roosevelt?*

Admiral McDONALD. Yes, sir.

Senator BYRD. What is the cost of the *Theodore Roosevelt?*

Admiral McDONALD. The *Theodore Roosevelt* we estimate is $2.6 billion, Senator Byrd.

OUTLAYS

[In millions of dollars]

	Fiscal year						To complete	Total
	1982	1983	1984	1985	1986	1987		
Traditional	72	210	422	524	744	1,102	4,920	8,024
Multiship	72	235	482	780	929	1,374	3,398	7,270
Difference		25	60	256	155	272	(1,522)	(757)

Admiral HOGAN. These are the outlay streams, if you will, over the FYDP years and then to complete outside of the FYDP, showing what the delta costs would be for the two-ship procurement versus the traditional method. And you see, we are paying additional outlays, but the delta is not overpowering. It is significant by all means. All these figures are tremendously significant, but the additional costs, as a percentage, are not overpowering.

Senator BYRD. Now let us assume that the Congress follows your recommendation and authorizes both of the carriers as you propose. What would the cost of the 72 and 73 be?

Admiral McDONALD. $7.2 billion, based on the long-lead moneys and the authorization for $6.7 billion. So what is before the Congress this year, Senator, is $6.7 billion for the authorization of two nuclear carriers. There has already been $475 million funded in long lead.

Can we go back one to that slide quickly? (No. 7.)

Senator BYRD. That gets back to the $3.6 billion per carrier?

Admiral McDONALD. That is correct, sir. That is the money that we are requesting which is represented on the second line, the $475 million, which is the long-lead authorization. The $6.7 billion is in fact what is in the budget this year and the bottom line is over here, $7.2 billion.

If you do it in the conventional or traditional manner, as the chairman asked previously, it would be $8 billion. Therefore, the derived savings, as we estimate on those two ships, is $754 million, and there is a possibility, because of *Roosevelt* being squeezed out of the yard, in the incentive to get her out so that Newport News has a contract on these two, that there would be $74 million saved on *Roosevelt* also.

Senator **Byrd**. But those two would cost roughly $1 billion more than *Roosevelt;* $2.6 versus $3.6?

Admiral **McDonald**. Yes, sir. To move forward to the next slide again quickly, (No. 8). I know that Congress has problems with the $6.7 billion in authorization, which obviously we have never requested that large an amount for carriers. But I would like to point out that in outlays, the money that you have to spend, the difference between authorizing two and authorizing one is on the bottom line of that chart there.

So in 1983 there was only a difference, and "only" may be a very small word when you are talking in millions of dollars, of $25 million; in 1984, only $60 million, then it starts to increase. But in the outyears, after 1987, is where you make up the difference, and you are picking up $1.5 billion in savings in that particular time.

Senator **Byrd**. So if Congress authorized only one, then the saving in outlays for fiscal 1983 would be $25 million?

Admiral **McDonald**. Yes, sir, $25 million.

Senator **Byrd**. And saving in outlays for 1984 would be $60 million.

Admiral **McDonald**. That is correct.

Senator **Byrd**. So in 2 years, there would be less than $100 million difference in outlays?

Admiral **McDonald**. That is correct, Senator Byrd.

Senator **Cohen**. Senator Denton?

Senator **Denton**. Admiral Hogan, it appears that sooner or later we are going to start confronting the question of whether or not the smaller carriers, with the predicted improvement of the V/STOL aircraft, will represent a relative bargain by the year 2000, vis-a-vis the large carrier for which you are now making a case, with deliveries as late as 1993 under the traditional method and 1991 under the multiship proposal.

We are beginning to look at a new phase in naval warfare, really. Senator Hart has kept our nose to the grindstone, and I will wait until he is not distracted because I want to give him credit for that. He has kept our nose to the grindstone with respect to making darned sure we do not run away with some kind of parochial, a big carrier complex. I wish to compliment him for that and for his persistence in the way he has forced the Navy to address the question of the relative efficacies of the two approaches.

I believe that possibly within his lifetime——

Senator **Hart**. You are expecting me to live longer than I do.

Senator **Denton**. I say this with the deepest sincerity. Possibly within his lifetime, most likely after I have either been kicked out of or retired from this body, we will reach a time at which we will have our cake and eat it too. We will have the numbers of the ships and possibly the capabilities of aircrafts on those ships to decide to go that route.

So I would like to ask a couple of questions in that direction. First, the AV-8B, although an improvement and a good attack aircraft in relatively unsophisticated environments, is principally a very economic five-and-dime-type airplane when you get into any kind of an environment, even like Vietnam, in which you have a relativly underdeveloped nation, if you will, but supplied by some pretty good airplanes from the Soviet Union and flown by pilots with reasonably good training.

Are we not dreaming to think about putting an AV-8 carrier wing into anything more than a low-threat situation? Just the next 10 years I am talking about.

Admiral McDONALD. May I answer that, Senator Denton?

Senator DENTON. Sure, Admiral McDonald. I did not know whom to address it to.

Admiral McDONALD. We feel confident that the AV-8B, as an evolutionary development to the AV-8A, will serve the Marine Corps purposes for close air support for their amphibious forces, and in the scenarios that we develop for the Marine Corps and their airwings to support them, it is a very capable airplane to do that.

As you are familiar with naval aviation, you know that we perceive that the AV-8B will have some of the characteristics that you could associate with the A-4.

Senator DENTON. I appreciate that prelude, and I am not trying to denigrate the capabilities of the AV-8. I am addressing the specific question that I mentioned; namely, within the next 10 years, can one look at an AV-8 complement as something that is able to go in against the kind of threat you might get in a Vietnam or even a Libya?

Admiral McDONALD. Obviously, he is going to have to do some of that depending on where the Marine Corps finds themselves engaged.

Senator DENTON. I mean alone.

Admiral McDONALD. But it is going to have to be complemented with the more capable aircraft that the carriers possess in today's world, and we are talking about the F/A-18 as a complementary strike fighter. You are talking about the F-4 fighter in the air defense type of situation, and for the AV-8B to operate in the Vietnam environment, that we knew, we would be in trouble unless we have complete control of the air. That is fairly obvious.

Senator DENTON. Let me ask another question as soon as I get Senator Hart's attention because I think this question will show that I am really with him on the kind of analysis he wants us to make.

Is there any kind of crystal ball into which we can gaze at the year 2000 or even 1995? We are looking at this postulation that I have already represented; namely, going to the smaller ships with V/STOL aircraft. What is the prognosis regarding the rate of improvement possible with a decent amount of R. & D. into V/STOL?

Is there in sight a time within that timeframe, before 2000, at which we may be looking at the possibility that a V/STOL aircraft might be competitive with large-deck carrier or land-based aircraft? Keeping in mind that in World War II we had some carrier-based fighter versus land-based fighter, and then in Korea with the jets coming along we did not because in the Navy we did not get the engines to do it. And then with the help of the bearded Admiral Perry, we got them and in Vietnam we were capable, with carrier-based aircraft, of taking on anybody's land-based aircraft.

Now, where would we be in 2000 with respect to V/STOL aircraft against land-based aircraft?

Senator COHEN. Admiral, before you answer the question, let me just reiterate that I have a commitment to Senator Hart, who has a plane to catch. I think we are now moving into a general discussion of the philosophical question as to what do you get with one big carrier versus three little ones or two smaller ones.

Senator DENTON. I am looking at the $754 million savings relative to the multiship CVN procurement.

Senator COHEN. Well, I am going to assume for the time being that those figures are correct, that you are going to save $754 million if you authorize two now and get all the economies of a big purchase.

But I would like to move away from that question now, in the interest of accommodating Senator Hart, to the other question. You may answer Senator Denton's question about what is the likelihood of our preceeding with the technological improvements to accommodate that kind of V/STOL capability. Then I would like to yield at that point to Senator Hart.

Senator DENTON. I would be happy. I do want to say, though, in deference to you, Mr. Chairman, that this question deals with the amount of R. & D. money that would be proposed for the V/STOL field.

I will defer to Senator Hart. I am in no hurry.

Senator COHEN. In fact, one of the questions has always been, why do we put so little in R. & D. for the V/STOL capability, only to find ourselves coming full cycle? We do not have the aircraft, and therefore we should not have the smaller carriers. We have been unable to break that cycle.

So, what you say is exactly right. You may find yourselves putting a great deal more into R. & D. if it would prove productive. That is the question I guess you are going to answer.

Senator BYRD. It is a key question I think and we should get an answer now.

Admiral McDONALD. Briefly, we feel confident that we are moving in a positive direction in low- or medium-speed rotary wing V/STOL aircraft for the near timeframe. I am talking about a joint effort for Army-Navy-Air Force-Marine Corps-NASA to develop V/STOL aircraft which can do some of the support roles for us, such as medium lift assault for the Marine Corps. Those types of things we should see in the early nineties.

We see that the technology that would lead you to replace the high performance tactical aircraft as being significantly behind that. We are not there yet, Senator Denton, and we would project that at the earliest, you are talking very close to the turn of the century for anything in the world of high performance and V/STOL fighter attack aircraft.

But we are confident that we have at hand the low-disc loading type of V/STOL technology such as the Bell XV-15 tilt rotor, the X wing and some of the other concepts that pose an acceptable risk to develop in the near term.

Senator **Cohen**. I think it is important question, but I think we would like to move on to the relative merits that Senator Hart would like to discuss. You have given us a letter. The committee has a letter outlining the advantages and disadvantages of the light carrier and the heavy carrier.

Perhaps, Senator Hart, you might want to proceed from there.

Senator **Hart**. First of all, I appreciate Senator Denton's kind remarks. Let me point out, however, that the idea of some of us—not just myself but others, including some in the uniformed service on a V/STOL aircraft—is not how much money or how long it will take to produce a V/STOL aircraft with the same capabilities of an F-14 or an F-18 or anything like that.

The whole point here is that there are some tactical aircraft missions that a subsonic or less capable aircraft can do. I think if we wait to go in this direction until we have a V/STOL aircraft that can do everything that a high-performance combat aircraft can do, it will be the 21st century. So that is not the point, I do not think.

The point is, is there a present mission for an aircraft of different capability—and many people think the Sea Harrier type of aircraft is one that is already here and with some very relatively minor modifications, can be capable of performing those missions. It is not the 21st century or it is not $100 billion. It is small dollars.

Second, for 5 years on this committee we have chased our tails both in the committee, in the Congress, and in the Defense Department, about the deck in the aircraft. I have offered money in deck design, and that has been resisted on the grounds that we do not have the aircraft. Then I offer the money, small dollars, research dollars, to get the aircraft and people say well, let's don't do that because we do not have the deck yet. And the whole thing has been put off until the 21st century.

What we are trying to do is crack that vicious cycle so that we can get both at the same time, and that is not 20 or 30 years from now.

This chart reminds me of the joke about the man who comes home and his wife opens the closet to show two new $10,000 fur coats, and he said, I can maybe understand one, but why did you buy two? And she says, they were on sale. The issue is not whether you save money by buying two carriers, big carriers. The issue is should we buy two carriers, and what could we get in exchange for those? No issue that a *Nimitz*-class carrier is more capable than a smaller carrier—light carrier, little carrier, whatever people want to call them. Little and small are not the issue.

The issue is what do you get for two or three of those carriers that may come close to equaling or exceeding what you get for one large carrier in terms of survivability and other mission performances.

Now, Admiral, in last year's authorization bill in a rather long instruction that I will have inserted in the record, the Conference of the Senate and the House agreed that the Navy was to produce for us the most operationally feasible aircraft carrier design that would be approximately 40,000 tons, et cetera. Quoting from that instruction, "The design for the carrier should be sufficiently detailed to permit decision by the Congress as to whether it should be authorized." And finally, the conferees also agreed that the Navy should submit that design by March 15, 1982.

When will we receive that design?

Admiral McDONALD. That was delivered on March 15. That is the study 45, and that language was in the initial remarks, sir.

Senator HART. And that is sufficiently detailed, in your judgment, for us to authorize construction of that ship?

Admiral McDONALD. We think that we can present to you, or we have already done in closed session, to respond to any other questions that you have relative to that design, Senator.

Senator HART. So that instruction has been met. Now, Admiral, if you were in Admiral Gorskov's shoes and the Americans were to construct two new carrier battle groups, how many more submarines or backfires or missile destroyers do you believe you would need to add to those you already have to deal with those two carrier groups, in addition to the 260 submarines you already have and the 380 antiship missile-equipped bombers you already have?

Admiral McDONALD. That becomes a very hypothetical question, Senator, as you well know. What you are suggesting, though, is that to not build the two, forces us into a situation where we cannot respond to the national strategies.

Senator HART. No, Admiral.

Admiral McDONALD. Small carriers will not provide us with the decks that provide the four-dimensional type of airwing that we feel is absolutely essential if we are going to go in harm's way.

We understand that there is a significant ASW threat posed by the Soviets, as you articulated on the McNeil-Lehrer report the other night with the Secretary. We do not have any problem with that. In fact, we have devoted significant efforts and resources to address the ASW problem, as you well know, with the SH-60B, our LAMPS MK III and MK I system, our SH-3 aircraft aboard our carriers, also with the S-3A's aboard our carriers, with the P-3C long range patrol aircraft.

Additionally in naval aviation now, there are 24 squadrons of P3's, to address the area ASW threat. I am sure that Admiral Walters can talk in greater detail to the SURTASS ships, the sonars, and even to the SSN's that we have, although not in the same quantity that the Soviets have. The point I hope I am making is that we have devoted a significant amount of Navy priority to the ASW threat.

Senator HART. Admiral, you are answering a question I did not ask. Let me ask the question again.

If you were in Admiral Gorskov's shoes and the United States were to add two more new carrier battlegroups, what would you want to add to the submarine, backfire and missile destroyer capability you already have to combat what you perceive to be an additional threat?

Admiral McDONALD. I could not answer that, sir.

Senator HART. Well, it seems to me that part of what we are up to here is to make life somewhat more difficult for our adversaries. If, in fact, by investing $24 billion we do not make life one bit more difficult for our adversaries, then it seems to me we have not accomplished a whole lot.

The point I am trying to make, Admiral, is that we are building a Navy that the Russians have already anticipated, in effect, and constructed both a defense against and an offense for, and I do not think the investment of $24 billion on our part is going to cause them one bit of trouble.

Admiral McDonald. It may. We believe that it will, Senator, or we would certainly not be over here requesting that money. We are not here just to build aircraft carriers. The scenario you have developed is a very interesting one and you are putting us in the ultimate conflict with the Soviets.

We are not addressing the many other conflicts that the United States has found itself in in the last two or three decades where the carriers have played a major role in response to wherever that crisis is, as power projection as well as potential sea control.

I think you have to build to a minimum, as the CNO and the Secretary have said, of 15 carrier battlegroups and then you start expanding to augment the carriers that you are talking to that could be identified as ASW carriers specifically. But to lock it at this stage of our history, considering the threat, to less than 15 big deck carriers, we do not agree, sir.

Senator Hart. Admiral, I do not want to do that. I want to go above 15 and I want to do it as fast as we can. So the issue here is not to defeat the request of the Navy here. It is to get beyond it in terms of numbers and to cause difficulty for our principal adversary in a way that I do not think this request really does.

I do not, in my own judgment, see that the Soviets are going to have to do a whole lot if we were to authorize this request here today in terms of supplementing their capability of attacking our carrier battlegroups. That is my whole point.

Senator Cohen. Senator Hart, could I just ask a question?

Senator Hart. Sure.

Senator Cohen. Senator Hart is raising a question in terms of what you would do if you were a Soviet planner—start from scratch, forget what we have now. You are a Soviet planner, and we have one big deck carrier. What would it take for you as a Soviet planner to defeat or take out that one big deck? Given the old carrier battlegroup, one-carrier battlegroup, what would you need? That is one question.

The second question would be, what would you need if, instead of having one big deck, you had the equivalent of either two smaller ones or three smaller ones? I think that is the other side of the coin. Not only, what does it take to eliminate a one-carrier battlegroup, but also what would a Soviet planner have to do to eliminate three or two, let us say, less capable, less swift, less survivable aircraft carriers.

Senator Hart. But more dispersed.

Senator Cohen. More dispersed, that is right. And I think that has to be the kind of question that Senator Hart is asking.

Senator Byrd. Could I interject? Is that the type of question we ought to answer, our top planner should answer in open session? I do not know. I just throw that out to you.

Senator **Denton**. May I ask you, Senator Hart, if I may rephrase your question slightly. Admiral Gorskov has been there quite a while; longer than any of these officers have been in any given rank. What is it now, 30-something years?

Admiral **McDonald**. Twenty-five plus, sir.

Senator **Denton**. All right, about 25 years he has been their CNO. I would like to pose him this question. Would he prefer to see us build *x* number of small carriers at a given cost versus this proposal here, and I think that he would hope that we would not go the CVN route.

I think he would tell you under truth serum that he hopes the United States does not go this way because I believe, as a result of my experience, that this is by far the better and most effective way to address the naval threat. It is not a question of two mink coats; it is the question of two sweaters and the temperature in the area to which the wife is moving is going to go from 50° to 20° and the guy does not have much money and he is saying that his wife needs two sweaters up there. That is what this proposal is.

We have gone from a one and a half ocean Navy with a three-ocean commitment. In consideration of the President's speech about what is prudent and necessary in the Caribbean area, we have gone to a one and a half Navy with a four-ocean commitment.

Senator **Hart**. Admiral?

Admiral **McDonald**. I am really lost in the questioning that is taking place here, Senator Hart, to be very candid with you.

Senator **Warner** [presiding]. If I might interject, I know the Navy is anxious to make its presentation. Senator Cohen has asked me to chair this portion of the hearing.

Senator Hart, do you have further questions?

Senator **Hart**. I have quite a few, actually.

Senator **Warner**. What do you think about the advisability of letting them have their presentation, or do you have a time constraint?

Senator **Hart**. If I could just ask one or two more, I would appreciate it because I have been waiting.

Admiral, if we built a number of smaller carriers for the same amount of money, could we get some comparision in terms of tons of shipping and numbers of aircraft at sea? Let us say, using the design that you presented to the committee and in using the slightly more than 40,000-ton range and using a cost of about a billion, and using a ratio of three of those carriers for one *Nimitz*, what is the comparison in terms of tonnage and aircraft at sea?

Admiral **McDonald**. If you decide strictly on tonnage, sir, obviously the three carriers in the 40,000-ton range would put at sea more tonnage than the current tonnage of the *Nimitz* class carrier, which is around the 95,000-ton class.

As far as the aircraft are concerned, you are probably putting about the same number. But, we must deal in types of aircraft that you might put on a deck, and I am going to give you a figure that would about equal as the best I can give you, Senator Hart, because you can adjust that just a little.

However, you give up capabilities when you do that because you are restricted from putting certain types of aircraft on the smaller carriers.

Senator **Hart**. I take it, it is the doctrine of the Navy that every carrier should be able to perform every mission, is that correct?

Admiral **McDonald**. We want our carriers—and our concept is right now, that it is equipped with a multidimensional airwing, and therefore we do, in fact, plan for those carriers to address the major threats, AAW, ASW, strike warfare. That type of responsive role.

Senator **Hart**. Admiral, several years ago, Admiral Kidd testified before this committee that we have an unfulfilled requirement for a number of antisubmarine warfare carriers in the Atlantic Fleet. Presumably we have not met that requirement yet. In your judgment, which would be the better investment to meet that need, the kind of carriers you are requesting or a different class lighter carriers?

Admiral **McDonald**. The class we are requesting, Senator Hart, gives you the flexibility to put more ASW aircraft on those carriers and operate them in large numbers while you still provide either striking capability or increased defense posture that you gain from the organic aircraft, in the large carrier airwing.

Senator **Hart**. But the Chief of Naval Operations testified just a week or so ago that he would not want to use the *Nimitz* class carrier in an ASW role, and does not believe anyone else in the Navy would.

Admiral **McDonald**. I am interpreting for the CNO, which is very dangerous, but I would like to believe the CNO is talking to a dedicated ASW carrier in that particular case and not using it in the full role. We have used the concept of swing wing airwing, if you will, where we can beef up the carrier airwing depending on what the threat is. We would not denude that carrier and make it a dedicated ASW carrier in any circumstance. I think that is what the CNO was implying to you in that response, Senator Hart.

Senator **Hart**. Thank you, Admiral. Mr. Chairman, I have a considerable number of questions I do not want to take up the committee's time with. I would like to be able to pursue them, but obviously we cannot. I appreciate the committee's indulgence here. I will submit them.

Senator **Warner**. We will have them submitted for the record, but I am informed that Senator Cohen had indicated that you have inadequate time.

Senator **Hart**. Well, I co-opted Senator Byrd, so I will defer.

Senator **Byrd**. I will be glad to yield my time to Senator Hart because he has a time problem.

Senator **Hart**. Thank you very much, I will be leaving soon.

Senator **Warner**. Senator Byrd, do you have any questions?

Senator **Byrd**. Yes; Admiral, some criticism of the large carrier is directed at its vulnerability. Can you provide us in your own words with a brief comparision of vulnerabilities of the large and small aircraft carriers? Start, if you will, with perimeter defense and conclude with damage control.

Admiral **McDonald** I would be happy to, Senator Byrd. We think when you are talking about vulnerability that the large deck carriers is the least vulnerable of any of our service ships in today's Navy.

Developing the scenario that you suggested at the end, we are talking about the large deck carrier, steaming in a carrier battlegroup since it is the centroid of that, and I do not want to throw this into a completely defensive role, but there are ships that are in company who can address the ASW threat with their SURTASS equipment, their sonar equipment, their LAMPS MK I and MK III helicopters which are stationed on the surface platforms. They also are equipped with surface-to-air missiles and other ships in that task group, or battlegroup, which will address the leakers, as we say, in the outer air battle in the way of air-to-surface missiles.

The carrier itself provides a degree, a high degree, or defenisve capabilities in its inherent airwing with the capability to search out and destroy submarines with its S–3 aircraft; to also search out and destroy enemy bombers before they launch their missiles with our fighter aircraft, the F–14, complemented by the F/A–18.

Then when you get in close, we have on the carrier the SH3H helicopter, which is our in-close sonar-equipped helicopter, to try to successfully attack any submarines that get into the high noise level environment that you encounter near the center of a carrier battlegroup at sea.

Now, when you talk about the survivability of the ship to absorb torpedoes or missiles, you are talking about a ship that has a steel flight deck, a steel hanger deck, protection in the armament areas, magazines protection, and side protection from torpedoes. Any other discussion on carrier protection would be classified.

There are approximately 2,000 compartments on an aircraft carrier which at times of combat are completely closed, as you well know, Senator. Therefore, in the case of damage, you have the greatest opportunity to neutralize it on an aircraft carrier. It has extensive firefighting systems throughout. Obviously, because it is carrying very high inflammable material such as jet fuels, ammunition and even aircrafts themselves. So we have to be equipped to fight fires on carriers, more so than on any other ships in the Navy.

So in a brief thumbnail—and that is very brief and I can provide more information for the record should you so desire—that is the reason we think that the carrier is the least vulnerable of our surface ships in the Navy today.

Senator **Byrd**. Admiral, how much easier is it for any potential enemy to detect a 90,000-ton ship as compared to a 40,000-ton ship, whether it be by air or surface or subsurface?

Admiral **McDonald**. Again, Senator, without getting into the classified area, there is very little difference. With the sophistication of reconnaissance vehicles in today's world, they have a capability to detect ships down to the size of a frigate or smaller with the same degree of accuracy that they could detect a 95,000-ton ship.

I do not think there is any question that detectability of ships at sea is no longer anything that is very secretive. The capabilities are there for ourselves; they are definitely there for our adversaries, at least, our major adversaries.

So size is no longer an indication of vulnerability from detectability.

Senator **Byrd**. So the 44,000-ton ship would be as vulnerable to detectability as would the 96-000-ton ship?

Admiral McDONALD We feel very strongly that it would be, sir. And when you are talking about a 40,000-ton ship, you are talking about a ship that is roughly 800-plus feet long, and the carrier is basically 1,000 feet long. So lengthwise there is not that much difference. And when I am talking about being able to compare it as far as detectability, you are talking about a ship that is roughly 300 feet long.

So as I say, size no longer is that important as far as being secluded or being nondetectable.

Senator BYRD. Admiral, there are some who say that the small carrier would operate in less than hostile environments. Now, given Soviet air bases and Soviet access to surrogate air bases and the abilities of their land-based maritime attack aircraft with air-to-surface missiles, could you identify areas in the world where you would operate a small carrier with reasonable assurance that it would operate over a sustained period of time in the accomplishment of its mission?

Admiral McDONALD It becomes more and more difficult as we see the threat emerging with greater proclivity for expansion and with greater power. I could have told you several years ago that I could envision a smaller carrier, a less capable carrier, due to the constraints on the airwing and its ability to move and its ability to survive from a vulnerability standpoint, that the Caribbean or an area off the coast of some of the Third World nations, that a carrier of this type could be utilized.

But with the increased threat we see in the Caribbean—and again, I am very close to classified information—but certainly the growth, not only of the Cuban Navy but of the Cuban Air Force, changes that perception.

We now have the problems in a small carrier when you steam it in harm's way, to give it the modicum of protection while using the projection of forces that it has aboard. The use of aircraft in the power projection role or sea control role, you are probably going to have to marry it up with a large deck carrier to provide those types of aircraft for early warning, for fighter protection, that it would not inherently have.

I hope that answers your questions, sir.

Senator BYRD. So what you are saying is, for a smaller carrier to operate in the environment that you mentioned would require a larger carrier to accompany it?

Admiral McDONALD. In many of the scenarios that you can develop today, yes, sir.

Senator DENTON. Senator Byrd, may I follow up on an aspect of that question?

Senator BYRD. Please do.

Senator DENTON. I think I can ask this in a nonclassified environment, because we have read in the newspapers of the potential or even the likelihood that there are going to be high performance aircraft introduced into Central America in the immediate future.

Would it not be efficacious in those waters, under those circumstances, considering the geography, where Cuba is, the radii of the aircraft involved that a small, non-*Kennedy* class carrier, for example, could be very useful in that area to meet a contingency or to contribute to the control of the air and sea necessary for the intermediate time?

Admiral **McDonald**. Yes, sir. You can create that scenario, Senator Denton. It would not work that well with an LHD-1 because of the constraints on that airwing. But obviously, in the discussion that we had in the closed session, the "light carrier" with the airwing mix we were talking to has capabilities to operate in that environment.

Senator **Denton**. I just thought that contributed to your thrust.

Senator **Byrd**. It does. Thank you, Senator.

Admiral, flight operations at sea may be disturbed or interrupted by weather, sea states, and surface winds. Can you provide us with some comparison of the 90,000 ton and the 40,000-ton carriers as to interruptability, disturbance?

Admiral **McDonald**. Yes, sir, we have in the immediate past some 40,00-ton ships that we can draw that comparison on relatively easily. In fact, we have some operating right now, Senator Byrd, in the U.S.S. *Lexington*, which is our training carrier, operating out of Pensacola. It oftentimes transits to the Key West area for better weather, and to train our naval aviators in carrier landings in the initial training program It also is a deck to provide that same kind of training for some of our fleet aviators who are undergoing refresher training in their specific type of aircraft.

We find—and I have flown off of 27 Charlies many times—that 40,000-ton ships are much smaller. The size of the tonnage is an indication of the size of the ship, both in length width. Their seakeeping capabilities are relatively quick, and they are affected by sea states much more dramatically than the 95,000-ton *Vinson, Nimitz, Eisenhower*, or even the *Kennedy*.

The larger the ship the more stable that ship is at sea. The larger the ship the larger the landing area. The larger the landing area affects the safety of aircraft operations not only in landing but in takeoffs. Its provide for multiple aircraft launches, for speed in launch to get aircraft in the air, and also moving aircraft around the deck.

The flexibility is tremendous on the *Nimitz* as compared to the *Lexington*. So the factors that you mention are all on the positive side of going to the large deck carrier.

Now, you can carry that to the extreme and to the ridiculous by saying that if 95,000 tons is that good, why don't you go to 200,000 tons. There is some place where the affordability crosses over, and we think, in all candor, after looking at all the designs that we have, that the *Nimitz* class carrier, the 95,000-ton ship, provides those features that you have just asked about and I have hopefully answered, plus survivability, plus sustainability, and the capability to operate all types of aircraft so that you can meet whatever threat there is in the best manner. And not just in any one area.

Senator Hart has posed some awfully good questions relative to ASW. But I think that we would be less than honest in our professional opinion if we did not tell you that we feel that we have to respond to a multitude of threats rather than to just ASW. Senator Hart is exactly right in his concerns on ASW.

Senator **Warner**. If the Senator would yield on that point. You know, the mix of aircraft on the carrier deck basically is offensive and defensive. Defense is almost constant, because you have the same defensive requirement whether you are protecting a small group of frigates or a whole task force. Therefore, that number of aircraft for defensive roles is basically fixed, is it not?

Admiral **McDonald**. Yes, sir.

Senator **Warner**. And given that fixed quantity of defensive aircraft, your flexibility is then forced into your projection aircraft and if you go to a smaller deck you end up with fewer projection aircraft.

Admiral **McDonald**. That is exactly right, Senator. We do not want to feel that we are always defensive. Too many times we get into a discussion which says, how can you defend the aircraft carrier; what are your assets to defend the aircraft carrier.

The aircraft carrier really has that inherent capability, but it also has in today's world the only opportunity to project power from the sea, from mobile, flexible bases that are very difficult to target. And if you compare it with the vulnerability of air bases, there is no argument whatsoever.

Senator **Warner**. I have been through that. The point I am making is that the defensive requirement is basically fixed, irrespective of the size of the deck. The defensive role for the carrier itself, its accompanying task force and any other elements with it, has a fixed quantity of aircraft. Therefore, the flexibility of going from 90,000 to 40,000 in terms of deck space most severely impacts on projection aircraft and projection capabilities.

Admiral **McDonald**. Yes, sir.

Senator **Byrd**. Admiral, do you have any experience to show the effect of conventional ordnance explosions on the decks of large carrier?

Admiral **McDonald**. Yes, sir, we have. Unfortunately, we have had several explosions on decks of carriers where there has been loss of life, tragically. The most recent that I can recall, Senator Byrd, are the explosions which occurred on *Enterprise* during the Vietnam timeframe.

At that time, due to an errant missile on the flight deck, fires were started when the aircraft were loaded, ready for takeoff, and in the ensuing holocaust on the flight deck, nine 500-pound bombs went off on the flight deck.

We estimate that the exploding force of those nine 500-pound bombs is about the same as about six Soviet air-to-surface missiles that possibly could be launched against one of our carriers. Yet that carrier remained operable that day, and could have been, through its firefighting capabilities, and by certainly taking some drastic action such as pushing the wreckage of aircraft over the side, operating aircraft within 24 hours.

As it turned out, the accident took place in exercises off of Hawaii, as I remember, and the ship went into Hawaii and was repaired and then continued for deployment to the South China Sea to operate off of Vietnam.

I might add that statistics show that during Vietnam the vulnerability of air bases was dramatic, where we lost approximately 400 aircraft on the ground and had about 4,000 more damaged from enemy action, from Vietcong or other types of raids. There was not one single aircraft lost or damaged due to enemy action abroad an aircraft carrier.

All of the aircraft carriers in Vietnam came back, and many are still in the fleet. Yet all the airfields that we constructed in South Vietnam are no longer ours, and in fact, today the Soviets are flying aircraft out of those fields.

Senator **Byrd**. I have just a couple of more questions if I may. Admiral, carrier forces are operationally employed in the Mediterranian, the Iranian Sea, and the Pacific. I believe the objective of the 15-carrier battle group force is to keep two carriers in each of those areas.

Now, what operational problems do you see if a mix of large and small carriers were assigned to those areas?

Admiral **McDonald**. That poses the problems that I discussed earlier with Senator Denton as far as the small carriers having to marry up with the big carriers in times of high crisis. In times of peace, a small carrier, for presence, could afford that type of appearance in the area, but not the capability in the area.

If you talk to meeting the threat, the small carrier is going to be limited, again going back to Senator Warner's discussion, as to what you can project, what you have aboard capable of doing the AAW or the outer air battle.

I would like to say that you might generate a thesis that six carriers could be required in the Atlantic and the Mediterranean, three in the Indian Ocean, and four in the Pacific.

Senator **Cohen**. You have not mentioned the Caribbean.

Admiral **McDonald**. Possibly two in the Caribbean.

Senator **Byrd**. Senator Denton asked several very key questions today. One got lost in the shuffle of our questions being asked at the same time, including one by me. Now let me ask this question, which is along the lines of Senator Denton's.

Do you as a professional naval officer and as Deputy Chief of Naval Operations for Air Warfare—if the Congress were to give you your choice of six small carriers or two *Nimitz*-class carriers, what would your professional preference be?

Admiral **McDonald**. Unhesitatingly, the two big carriers.

Senator **Byrd**. Thank you.

I may have other questions that could be entered in the record.

Senator **Cohen**. What was your question again, how many big carriers and how many small.

Senator **Byrd**. Two *Nimitz* class carriers versus six 44,000 ton carriers.

Senator **Cohen**. Well, I want to move the discussion back to an analysis of the costs involved and the cost savings. But let me say that this is an issue that Senator Hart has been raising for some time. Everybody praises him for it and then they say, we cannot do it just yet. Nonetheless, they thank him for moving the Navy in that direction, and then they dismiss it. They say we cannot do it yet—it does not deal with the fundamental issue that we have to resolve.

I am not saying what is the right or wrong answer on this. But, in figuring out the costs of the ship, one element is whether you can get three small ones or one big one or two small ones and one big one. The questions about ordnance, fuel, vulnerability—those are other factors be be considered.

But we also have to take into account the question of whether or not dispersal of ships gives you an added element of, if not survivability, at least of making it more difficult for an adversary to undermine your capability. That is something Senator Hart has been trying to get at.

If we have fewer and fewer assets, and we have greater and greater areas of responsibility, how are we going to continue to measure up and meet those responsibilities?

Senator Nunn, for example, is raising an issue in another area: To what extent, even with the President's budget, are we able to carry out these global missions that we have articulated for ourselves? And in hearing after hearing, it is becoming more evident that we have a greater responsibility than we have capability.

Now, it seems to me that Senator Hart is at least trying to address that issue: How do we continue to meet the likelihood of an increased naval threat in areas beyond those that we currently envision, extending into the Caribbean, with the Soviet shipbuilding program as advanced as it is and as aggressive as it is? Are we in fact putting more of our assets, more of our resources, into getting fewer ships, and does that give us more or less survivability?

I think this is the issue which he really is trying to get at: Does dispersal of assets with a more limited capability, but spread into other regions of the world that we have defined as being in our interest, outweigh the individual vulnerability of the ship, the lack of full capability for the mission requirement?

That is an issue that I think we have to continue to ask. I do not think there is any question, that when you look down that list and look at what the big carrier can give you in terms of capability offensive and defensive, that its capability is impressive. I do not think anyone would disagree with that.

The real question is: Are two more aircraft carriers going to give us that much more, in view of the amounts of money we are going to spend, in view of the fact that the Soviets are building one attack submarine every 5 weeks and we get what, two a year if we are lucky, two or two and a half a year. So they are 10 to 2, and they are going to continue to build that way whether we have a nuclear freeze of not. That does not talk about nuclear attack submarines, but they are building one every 5 weeks.

What does that mean in terms of threat to those decks sitting out there? Or can you ever offset that by just building smaller and more numerous aircraft carriers, given the fact that they are going to be more limited in capability and more limited in their ability to survive?

So, I think that really is what Senator Hart is trying to address, and I think it is an important issue. I think the hearing—at least we will have this one, and there will be many more, I am sure, is important in trying to come to a resolution of that. But that is essentially what he is getting at—numbers, numbers.

Can we possibly continue to meet the nature of the threat that we are faced with, and will be faced with, with a shrinking amount of ships that are more capable, are clearly more capable offensively and defensively? But what is going to be the impact of those numbers as they continue to mount against them?

Senator **Denton**. May I just make one comment, Senator Cohen, because I know how good willed—and in many areas you have much more expertise in this field than I, because of your chairmanship and so forth. I do think this is a constructive thought.

Most of these gentlemen, like myself, have studied naval history, and you are quite right and Senator Hart is quite right to question the inertia that may be involved with a parochial view of a clique within the Navy, such as big carrier clique, that kind of thing.

I am with you on that. Let me offer you this though. The British, when they were confronted with the American Revolution, had to use frigates against our Navy because their men-of-war—were clearly better—were one of them to come and engage 10 frigates, it could have sunk 10 frigates—you can bowl them over like tenpins.

One carrier, big, can do more against a given number of ships than two or three or four small carriers.

The Germans in World War II built, to our mystified reaction, some pocket battleships which were just a little bigger than cruisers. And they rolled over the merchant ships and sank them and sank them and sank them, and ruled the South Atlantic with those things, sinking merchant ships and everything else. Again, not as many, but better.

So the pocket battleships and the frigates versus the men-of-war, those are things that these gentlemen are aware of. And they are also aware of trying to do the job you are talking about.

Piggybacking with you, however, and going back to a point which was raised while you were gone, that is the possible utility of a small carrier in the present environment. We did not win on the *Oriskany* last year.

Going back to the question of Latin America, the immediacy of that confrontation to us is months. It is here for all practical purposes. Would it not be desirable to point to the RDJTF and say, OK three carrier battlegroups can be required to be absorbed within that. And you just mentioned a number of oceans in which we could go for four and so forth, and that would indeed be the answer to a somewhat capable maritime strategy, which we are supposed to be adopting.

But in truth, you guys are asking for money which is within that which is possible, and I am asking you, would you not see the situation in Latin America as one which we should regard as a new factor respecting the reactivation of the *Oriskany*?

Admiral **McDonald**. Senator Denton, that certainly is attractive. We feel strongly that at the time we raised the *Oriskany* issue last year there was a position for such a ship in the area that you are talking to. Again, constraining the air wing because of the catapult and arresting gear, you would be confronted with an A-4 air wing, or without some major modifications to put the gear and the catapult for the F/A-18, you would be constrained to a lesser air wing capability.

But the A-4 looks like it would do very well in both a fighter and attack role. So it could perform in a Caribbean scenario extremely well.

The *Oriskany,* or the *Bonhomme Richard* would provide—and I hesitate—let us say the 27 *Charlie* class-carrier reactivate—will provide and still offers the only opportunity to provide 15 carriers in the near timeframe.

There is a point that, due to the threat involved and so forth, and as time goes on and the escalation of dollars starts entering into the reactivation, that it may not be wise to reactivate *Oriskany.* But certainly in today's world *Oriskany* is still a very prudent choice.

Senator COHEN. I think this question is very helpful. I do not disagree with what you are saying or Senator Warner or Senator Byrd. If you look pound for pound at the big deck carrier, you get a much better buy in terms of its costs and effectiveness.

But, still, we have the remaining issue: Should we not, as a matter of policy in the future years, try to get more numbers, How do we get more numbers? That is really the issue we are trying to deal with. Can you get more numbers, and do those numbers offset the loss in capability?

Admiral MCDONALD. I think the latter part of the question, Mr. Chairman, is the essence: Does the loss of numbers weigh that heavily for dispersal or weigh that heavily the other direction? And I would offer that distributed numbers, distributed forces, really do not provide you with that type of invulnerability.

And I think again you were out of the room on business when we were discussing detectability. Small really does not make that kind of difference as far as detectability is concerned. And when you are talking about creating possibly three for one or two for one as a type of a tradeoff, you are talking about a carrier that again is less capable, less survivable, less sustainable, requiring additional forces to act in support of it.

So I am not sure that dispersal alone is as attractive as it sounds, because you are not just taking the carrier and putting it out there by itself. You must again provide the support forces that go with it. And as long as it is less capable, less sustainable, more vulnerable, I think you create a bigger problem by dispersing forces.

Senator COHEN. And I may not disagree with you. What I was suggesting when Senator Hart was asking his question, is that we must ask the question, if you were a Soviet strategist, what would you do if you found the U.S. Congress funding two more big deck carriers? That is half the question.

The other half of the question, as I suggested to you, is, What would you do if you found the U.S. Congress funding, instead of two carriers, six small ones? And we can—I think that is the only fair analogy you can make. What do you get with smaller ships, less capable, more widely dispersed?

That, I assume, is the judgment that you would come back and give us. I think I know what the answer is, but at least for the record, we are in the position to make that kind of assessment. It is a hypothetical, but it is one that you obviously, as a professional military man, are capable of dealing with and do deal with on a daily basis.

Admiral MCDONALD. I think an interesting thing in this whole discussion—and since Senator Denton referred to the newspapers as sort of declassifying information, I think it is fairly well known that the Soviets are building an aircraft carrier. So you have to stop and ask yourself, for what purpose are they building aircraft carriers.

The obvious answer, to me as a naval aviator, is that they are going to put tactical air power at sea to provide protection for their surface action groups, which are naked, very vulnerable to the carrier battle group at sea today. And when you look at just the ASW aspect, you overlook that part of the big-deck carrier's ability to do this type of thing.

Senator **Cohen**. We may find ourselves in just the reverse position, if that is the case, when they try to mirror what the United States has, to make themselves a naval power. We may find the tables reversed, where we have to go back to more than 100 nuclear attack submarines.

Their approach at this point has been to build nuclear submarines to take out our carriers. Since they are now going to build carriers, they have indicated, I suspect, that given the constraints we have on our free society—having to debate the allocation of resources—we might very well find ourselves in the position of having to go for more attack submarines to take out their carriers.

Admiral **McDonald**. That is interesting.

Senator **Cohen**. Well, let us go back to the charts and questions of economies.

Admiral **Hogan**. We were talking about the outlays and I have left it up here, so most people know that pretty well. We are almost at the end, sir.

A savings from:	*Millions*
Reduced escalation	$304
Multiple shipset buys	250
Enhanced productivity	100
Reduced start up costs	100
Total	754

This is where the savings are coming from, reduced escalation, which really results from that earlier delivery. And one of the dimensions we have been talking about here today is time, and these mature design two ships we are asking for, we are going to get them rather quickly compared to any other alternative. So we also get them quicker, and we get the reduced escalation. We have economic order of quantity, multiple shipset buys. We have enhanced productivity with the learning curve advantages in the shipyard and reduced startup costs because we are going to do it in series.

And that is the total savings we see on these two ships. That number, the Navy number, we think is a good number.

Senator **Byrd**. Do you feel that is a pretty firm number?

Admiral **Hogan**. Yes, sir. We looked at it. Newport News has done an independent review. We have done ours. We are very close when you add everything up.

Admiral **Fowler**. We are getting very confident of those numbers, Senator. We have looked at them a lot. The more we look at them, the better we like them, and potentially they might even get larger.

Senator **Warner**. They are awfully round numbers, and are a bit suspect because of that.

Admiral **Fowler**. Although these are large numbers, Senator, after the first couple digits you almost lose the significance of the remaining digits. So we tend to round them off.

Senator **Cohen**. May I suggest something? I am told that GAO is going to come in here on Monday and say that, if anything, you are probably conservative in the amount of savings you are going to get.

Senator **Warner**. That is interesting. I have heard that.

Admiral **Fowler**. The whole concept is based on a full and unqualified commitment up front to achieve these savings. If we do not have that on the part of the Congress and the country, there are not going to be those kinds of savings. I think it is very important to understand that they are realizable only with this up-front commitment, not with some metered approach.

Senator **Byrd**. Well now, let me ask you this. You say reduced escalation. I assume by that you mean the inflationary factor?

Admiral **Hogan**. Yes, sir.

Senator **Byrd**. What inflationary figure are you using?

Admiral **Hogan**. We are using in the FYDP years the indices, the Department of Defense indices. In the out years it is straight line, some 6.5 percent when we get outside the FYDP.

Senator **Byrd**. What are you using for the first 5 years?

Admiral **Hogan**. It is a scaled escalation. I do not have it in memory. We can submit it. It is a standard OSD escalation.

Admiral **Fowler**. They vary for each year. I cannot give you exactly what the number is. I will for the record.

[The information follows:]

SHIP PROCUREMENT PRICE ESCALATION INDEX

The Department of Defense major commodity procurement price escalation index used for ship construction is:

Calendar Year:	*Annual percentage rate*
1980	7.9
1981	8.0
1982	7.4
1983	7.0
1984	6.8
1985 and after	6.5

Senator **Byrd**. I think it would be well to have it in the record, as to what assumptions you used in order to get that $304 million figure.

Admiral **Fowler**. Traditionally, the last several years, shipbuilding has inflated at a higher rate than the OSD indices. We know that as a fact. This year we are using the OSD indices as we always do to project what the out year escalation costs will be.

Senator **Byrd**. And where do you get the multiple ship buys? How do you get the $250 million?

Admiral **Hogan**. It is really an economic order of one. In other words, when you are buying two of things and buying them in a production facility, they can gear up and you can buy them cheaper.

Senator **Denton**. Especially in the same shipyard.

Admiral **Hogan**. And this spreads throughout the country, Senator, in other places where the subcontractors are, which is almost nationwide.

Admiral **Fowler**. About $3.5 billion of total ship costs are Government-furnished equipment. In addition to that, a very large portion of the ship costs that are spent by the shipbuilder are for materials and ship components. So very small savings for each item by buying two at a time rather than one at a time turns out to be very significant dollars, just the purchasing action alone.

Once you make that kind of a commitment up front to the suppliers, it trickles on down, so to speak, to second- and third-tier suppliers. Often these kinds of savings can accumulate to a much larger extent than we are able to estimate at this early stage.

Senator **Denton**. Following up on Senator Byrd's question, the $250 million there, where it comes from—and again, is it not so that Newport News Shipbuilding will be building both of those ships? And to what degree does that contribute to the savings, the fact that they have the labor pool there, and no off time, and all the additional procurement factors? I do not know the answer.

Admiral **Fowler**. It contributes significantly in terms of being able to plan for our force. To some extent, once the commitment is made the companies would start to look hard at other improvements that can be made, I am sure. We are going to get a very significant gain from that.

Senator **Cohen**. I agree with all of this. But let me say, I can make another argument on the other side that, just as we want to go to multiyear procurement in our shipbuilding programs, and we do want to do that, we also want to have more competition.

In the absence of competition, you tend over the years to have an installation or an industry shipyard that does not produce those kinds of savings. I am not saying that is the case here, but one of the arguments for having two of the smaller ships is that you get other yards involved and you get that balance of having some competition.

I do not disagree with your analysis in this particular case. I simply say, though, if you put it in one yard, they have the expertise and they are going to have the work force there, and they have the learning curve down. That is all well and good, but it also runs contrary to the other argument of Secretary Lehman, that we want more competition in the shipbuilding industry. The only way you are going to get it is not in the big carriers; you are going to get it in the small carriers with different yards.

Admiral **Fowler**. Senator, if I may comment, the competition is very important. I agree with you completely. It is one of the things that has made this country strong.

In this instance we have no competition since we have only one shipyard in this country that is capable of building a nuclear aircraft carrier. And I think that you would agree with me that when you do have a long-term commitment—and one objective view that we might both take is the example at Bath, where they have made significant gains through the long-term commitment of building ships there and have made very significant productivity improvements. A good example is right there.

Senator COHEN. Of course, they are in competition with a number of other yards, which gives them an even greater incentive to come in under budget and ahead of schedule.

Admiral FOWLER. I think we would like to see another shipyard in this country building nuclear carriers if we had our way.

Senator COHEN. Well, again, I think on Monday you are going to find GAO will support, generally speaking, these estimates and say that you may even do better.

The other question has to be raised, however, as to whether you need two ships or two fur coats? Would one be sufficient? Maybe a couple shawls, instead of one big fur coat. Again, that is an issue that has to be debated by the committee and the Congress. But I think it is a valid issue.

What would happen, for example, if you came in here and asked for one big deck carrier this year, and some of us on the committee said, hey, in addition to one big deck we will give you two other ships? I think you probably would have grabbed it and said, the more the better.

So it really comes down to a question of, do we need the two big decks? And if we do, I think you will probably have the support. If we need to have something beyond that, I think so.

Admiral FOWLER. Senator, we are really breaking with tradition here. My recollection is that we have never asked for a nuclear carrier before. The Congress has put it in on a one at a time basis, on top. This is the first time we have really taken a long term look at what the Navy's needs are and tried to be the good stewards of the taxpayers' money that we ought to be, we tried to lay that out in a very cost-effective way.

Senator COHEN. I understand that fully. What I am suggesting is that if you had come in, consistent with history, and asked for one, we would have had the debate: Is it conventional, is it nuclear? We have been through that. I think that has been fairly well resolved.

Then there could have been several of us saying, but in addition to the one we think you ought to have more and we are going to give you some added money in here for two light carriers. I think the Navy would have welcomed that at that point, at least the additional ships. Maybe you would have said, combine them into one and give us the second carrier.

We still have to get back to the question that Senator Hart raised. One, it is great to have two, but do we need them, or is there a better buy? Can we get more with exchanging two or three for one? Now, looking at the figures, the answer may be no. The figures, I think, would support the economies claimed.

Senator DENTON. Senator Cohen, may I ask you a question? You mentioned the necessity or the desirability of building so many more attack submarines, and so forth. And you know, I am not arguing with anything you have said about that sort of thing.

In the larger question of confronting on the floor, the question of how much we might cut defense or whether to cut defense, do you have an idea, an assessment of our overall committee, not just this subcommittee, as to the resistance we might offer to cut? The Soviet Union is spending 14.6 percent of its GNP on defense and we are spending 6 percent, and with the reality of the kind of question you posed, we are really kind of sticking these guys with an impossible dilemma when we say the military has to cover this, this and this.

And you know, we engage a lesser included question when we ask them whether it is dispersal or small ships or larger ships. Do you know whether or not this committee is prepared to resist almost unitedly a large cut in defense or any kind of substantive cut?

Senator **Cohen**. Well, if I read the Washington Post correctly, Senator Tower has indicated that we can take $2 billion. I think that is what he said. I suspect from my reading of the committee that there will be pretty strong support for maintaining something close to the President's budget.

But there are members, including the former chairman, Senator Byrd and others, who have indicated that where there are areas that we feel we can cut and we find we cannot justify the system, there will be reductions. I do not see any movement on the Armed Services Committee to engage in wholesale cutbacks of the budget. But I am just speaking as one member.

I think you have completed your statement, gentlemen. Any other questions, we can ask you for the record, unless Senators Denton or Byrd have other questions. I am satisfied, looking over the presentation in terms of the cost savings, that you can do it in any system.

I think a lot depends upon builder confidence. If the contractor has confidence that the buy is going to be there and you are going to stick with it, you are not going to cancel it, then they can go ahead and make economies. I do not think there is any question about that in practically any aspect of industrial development. That applies to ships as well.

So I am not prepared to challenge any of these numbers, nor do I think anyone else would be in that position. The real question would be on the need. Does this give you what you need and can you do it better with a different balance? That I think is the issue.

Senator **Byrd**. Would you supply for the record the cost of the first *Nimitz*? My recollection is that it cost $666 million.

Admiral **Fowler**. That is correct, a little less than $700 million.

Senator **Byrd**. And then the second *Nimitz*, as I recall, was $999 million, right at $1 billion.

Admiral **Fowler**. The second was $741.9 million, according to my figures.

Senator **Byrd**. $741 million?

Admiral **Fowler**. Yes, sir.

Senator **Byrd**. And then the third one, do you have that?

Admiral **Fowler**. $1.344 billion.

Senator **Byrd**. And what year was that contracted for?

Admiral **Fowler**. The contract for *Nimitz* was first awarded in March of 1967 and the total cost of the ship, not what the contract price but the total cost as we end-cost the budget now, was $676.8 million.

Senator **Byrd**. And that was contracted for in March 1967?

Admiral **Fowler**. Yes.

Senator **Byrd**. And the third *Nimitz*, when was that contracted for?

Admiral **Fowler**. In April of 1974, for a total end cost of $1.334 billion.

Senator **Byrd**. You say it basically is the same. Well, it really is the same ship.

Admiral **Fowler**. Yes, sir.

Senator **Byrd**. But twice the cost 7 years later.

Admiral **Fowler**. That is a good indication of what our economy has been doing.

Senator **Byrd**. Just one last statement. Norman Polmar, perhaps the foremost authority in the Western World on the Soviet Navy, has stated a number of times that the weapons systems or the weapons system most feared by the Soviets in the conventional role, the nonstrategic role, is the large aircraft carrier.

Does his assessment—is it about in line with what you folks would think?

Admiral **McDonald**. We certainly believe that, Senator Byrd. We believe that very strongly. When you know that Cruise missiles certainly pose problems for the Soviet Union in their defense, and the fact that the aircraft carrier can move over the face of, or over the oceans of the world, and project that kind of inherent threat to the Soviet Union if tasked to do so, it has to be a very formidable task for them to address.

Senator **Byrd**. Thank you.

Senator **Denton**. I in no way meant to reflect upon Senator Byrd's hound-like pursuit of economies where they can be found. And I believe that Secretary Weinberger's 32-point approach is something that each of us and all of the services will feel and applaud.

And certainly, sir, I want to, as I have many times on the floor, express my admiration for your willingness to pay the price for defense, but also not to waste anything. I did not mean in any way to——

Senator **Byrd**. Oh, thank you, sir.

Senator **Denton**. I have one question. Your prepared statement addresses the life cycle cost of conventional and nuclear large-deck carriers, Admiral McDonald, and the statement indicates that they cost out approximately the same over 30 years, but that over 45 years the CVN costs out significantly less.

I am sure that your analysis was comprehensive and my question may be naive here, but do your analyses include the oiler costs? That is, proportionalizing out the costs of the oiler that would be applied to the refueling that would occur with the conventional carrier? Do they cost out the fuel of that oiler's movements from its erstwhile place to a replenishment area and the repetition of that every 3 days or so?

Do you cost out the accidents—and I guess the answer to this would be "No," but I would like some idea, qualitatively anyway—the accidents that would accrue with a smaller deck carrier under pressing operational circumstances in which launches and recoveries would take place in bad weather, resulting in accidents? I wonder if there is any historical way to get at that.

And then, of course, the intangible cost of the times when in operation, peacetime crisis or some kind of wartime situation, in which you cannot launch or cannot recover, you cannot operate from the smaller deck because of the rough seas or whatever.

Admiral **McDonald**. In answer to the first part, Senator Denton, yes, sir, the O. & M. costs have included and the life cycle costs have included the fuel that not only the conventional carrier is burning, but also that of the supply train to provide that type of fuel to it. That is in that cost. That is all part of it. The support ships have basically been considered in the battle group in that manner.

In response to your question relative to aircraft safety and safety of operations, I would say no, sir, we have not included that, or have I done an analysis that would balance the *Kennedy* against the *Nimitz* in operational accidents. You pose an interesting question there that we could pursue, and we will try to provide you with some appropriate statistics for your information. But it is not in that cost.

[The information follows:]

Seapower

An analysis of aircraft carrier landing accidents versus carrier size was conducted in 1977 by the Naval Safety Center. This review indicate the largest sized carriers (80,000+ tons, full load) were approximately twice as safe as the smaller carriers (37,000 to 44,000 tons). This ratio held true for fair and bad weather (Pitching Deck) operations. In addition, while not included in the statistics, it should be noted that the larger carriers can conduct flight operations in higher sea states and more adverse weather conditions than would be possible with small carriers.

CV LANDING MISHAP RATES/10,000 LANDINGS

CV size	Overall mishap rate	Pitching deck rate
Small	3.72	0.33
Large	1.78	0.15

Small=37,000–44,000 tons; large=80,000+ tons; considers all aircraft types operating from the carriers between fiscal year 1965–77.

And then, of course, the subjective judgment that you have put on the end is purely that, and very difficult to determine that, when sea conditions and/or operating capabilities of one ship versus the other as to what you lose. That is not in that estimate. But obviously those all slant themselves to the big deck carrier in a positive trend.

Senator **Denton**. I forgot what the General said: But for the lack of a nail for the horses, the shoe on the horse, we would have had that battle won. And there would be times when the inability to launch or recover would be like that. I do not know how often, but it would be a terrible situation. You understand the thrust?

Admiral **McDonald**. Yes, sir.

Senator **Denton**. If you have no further questions, Senator Byrd, the chairman has asked that I adjourn this hearing until 2 o'clock this afternoon—excuse me. Admiral McDonald?

Admiral **McDonald**. Am I to understand that we are coming back at 1400?

Senator **Denton**. No.

Admiral **McDonald**. May I say in closing, I certainly appreciate the time that you and Senator Byrd and the other members of the committee, allowed for us to present this very complex issue.

I think we have, in the discussion, focused almost primarily on the big deck carriers and the smaller carrier and the capabilities, do you want two or one? And I think lost in this discussion, unfortunately, is the Navy's protestations, and we feel backed with sound professional judgment, as you have proffered earlier this morning, that the big deck carrier to us is the way that we see to meet the overall threat. But we are not discarding the light carriers. The LHD-1, which has not been discussed today, gives us a convertible capability, and although we displayed in the profile of the ship some AV-8's and some ASW helicopters, that mix is also capable of a variance.

So we would offer that there is a capability inherent in our building program right now, that would help solve this dilemma, this dichtomy that exists between big decks and small decks. We think we are going in that direction, as we have tried to indicate on that slide, and I think it got lost in the dialog here today.

Thank you very much for letting me discuss that point, sir. And thank you for letting us appear today.

[Questions submitted for the record follow:]

QUESTIONS SUBMITTED BY SENATOR WILLIAM S. COHEN

15 CARRIER BATTLE GROUPS

Senator COHEN. Admiral, you say in your statement, "As powerful as our carrier battle groups are, their current number provides insufficient warfighting capacity * * * to fulfill today's worldwide commitments." How many carrier battle groups are needed to meet those commitments? You also said in your statement, "This single action of fully funding two nuclear carriers in fiscal year 1983 will not provide the Navy fifteen deployable carriers in this decade." What actions are required to provide 15 battle groups by the end of the decade? Please provide a program which you can say will provide 15 battle groups, with costs, including costs of escorts, aircraft, and associated supply ships. Please also note how much this will cost above the funding contained in the Administration's current budget and Five Year Plan.

Admiral McDONALD. We have determined through extensive planning, analysis and recent real world operational experience that 15 deployable, large-deck carriers with their associated full-range, multimission tactical air power are the absolute minimum prudent force needed to regain the desired level of peacetime deterrence and warfighting capability. The current plan to achieve 15 deployable carriers involves the following actions:

1. Continue the Service Life Extension Program (SLEP) for carriers. CV 59 through CV 67.
2. Retain *Coral Sea* and *Midway* in active status at least through 1989. Evaluate the condition of both ships prior to 1989 to determine the feasibility of further extending their service life.
3. Procure CVN 72 and CVN 73 in multi-ship production delivering each of these ships 22 months early at a saving of approximately $750 million. The commissioning of *Carl Vinson* (CVN 70) in March 1982 will provide the Navy with its 13th deployable carrier. This number will increase to fourteen in 1987 when *Theodore Roosevelt* (CVN 71) is placed in service. The multi-ship production of CVN 72 and CVN 73 will provide two large deck modern CVN's and allow the Navy the option to either replace the World War II vintage carriers *Midway* and *Coral Sea* or to further extend the service life of one or both of the older ships and use the new deliveries as force-building platforms. Because of the uncertainty associated with the future condition of the older ships, current planning calls for CVN 72 to replace *Coral Sea* (1989) and CVN 73 to replace *Midway* (1991).
4. The quickest path to the fifteen deployable carrier battle groups would be through the additional extension of *Coral Sea* to 1991 and *Midway* into the mid-1990's. If this proves feasible, then CVN 72 (delivery in 1989) will provide us our 15th deployable carrier; CVN 73 would then replace *Coral Sea* in 1991, maintaining 15 carriers. Extension of *Midway* into the mid-1990's would allow us to sustain the 15 carrier force. Authorization of CVN 74 for delivery in the mid-1990 timeframe

would then provide a replacement for *Midway*, which in turn could be used as the replacement AVT for *Lexington*.

Subject to Congressional support for the current building plan, Navy will have adequate surface combatants in fiscal year 1989 to support the carrier force level of fifteen deployable ships. At that time we will not have completed delivery of all CG-47's in the pipeline and only the lead DDG-51 will have been delivered. Therefore, we will have older and less capable ships in the battle groups until the DDG-51 class delivers in adequate quantities. To achieve required levels for Carrier Battle groups and Surface Action Groups, we will also have to use older and/or less capable ships in escort of the Amphibious Forces Convoys and Underway Replenishment Groups.

The current five year plan contains a request for four AOE's and eighteen TAO's which are required to provide logistic support to the battle groups. Until all of these ships have delivered in the early 1990s, we will have inadequate support forces available.

The five year plan provides for the procurement of aircraft to support the formation of the thirteenth and fourteenth air wings. Continued procurement of tactical aircraft at the outyear five year plan procurement rates will support the formation of the fifteenth air wing in the early 1990's, coincident with the estimated delivery date of a fifteenth deployable CV. No additional funding is required in the current five year plan to attain this aircraft force structure.

LEXINGTON (AVT-16)

Senator **Cohen**. Admiral, do you plan to retain the *Lexington* in service as the training carrier until the end of the decade?

Admiral **McDonald**. The CNO has determined that U.S.S. *Lexington* (AVT-16) will continue as the Training Command qualification platform at least through fiscal year 1989. *Lexington* is scheduled for an overhaul in fiscal year 1985 in order to continue in her present role. A reevaluation of her material condition will be required prior to fiscal year 1989 to determine if she can continue into the 1990's as a training command asset.

Senator **Cohen**. If not, what ship will replace her?

Admiral **McDonald**. A recent inspection by RADM Bulkeley suggests that *Lexington* could serve into the 1990's; however, should it be determined later that the *Lexington* cannot continue in service, it is envisioned that either U.S.S. *Coral Sea* (CV-43) or U.S.S. *Midway* (CV-41) will assume the AVT role. The ability to continue *Coral Sea* in service beyond fiscal year 1989 will also have to be determined.

Senator **Cohen**. What effect will this have on attaining 15 deployable carriers?

Admiral **McDonald**. To attain 15 deployable carriers by 1990 would require the extension of *Lexington* until the mid-1990's, *Coral Sea* until 1992, and *Midway* until the mid 1990's in addition to construction of CVN 72 and CVN 73.

Senator **Cohen**. Will it require construction of yet another carrier to meet the goal?

Admiral **McDonald**. Without U.S.S. *Lexington*, a 15 carrier force is not attainable until 1992 at the earliest.

Question Submitted by Senator Jeremiah Denton

AIRCRAFT CARRIER PROGRAM

Senator **Denton**. Admiral McDonald. The President's fiscal year 1983 Defense request calls for authorization of two *Nimitz* class aircraft carriers (CVN 72, 73). It has been suggested that procurement of smaller, conventional carriers would be less costly, allowing for procurement in greater numbers. While there is little doubt that a 40,000 ton carrier would be significantly less costly than a *Nimitz* class CVN, I remain unconvinced that the total cost of a small carrier task force would be proportionately less. Information that I have received tends to indicate that the requirements for a carrier task force, in terms of escorts, resupply, and sustainability and operation, remain fairly constant whether the focal point of that task force is a small or large deck carrier. Would you comment for the record on the impact of a small deck carrier on the costs and requirements of a carrier task force?

Admiral **McDonald**. We envision the task group requirement for the small deck carrier to be at least the same, if not more than that for a CVN. A battle group, less the carrier, which consists of two CG-47's, two DDG-51's and two DD-963's, costs approximately $4.9 billion in fiscal year 1983 budget dollars. If two or more CVL's are substituted for the CVN, the battle group requirement would increase by the number of additional CVL's. A strong case can be made however, that the CVL with the reduced capability of its smaller air wing would require, in compensation, a larger number of surface combatants to provide the additional ASW and AAW support. In addition to the escort requirements, the logistic requirements for each additional CVL would increase proportionately.

Question Submitted by Senator Harry F. Byrd, Jr.

AIRCRAFT CARRIERS

Senator **Byrd**. There was some discussion before the Committee recently about the ability of aircraft carrier forces to operate in extremely hostile environments—specifically the Norweigian Sea and in the waters to the east of the U.S.S.R. The discussion explored the desirability of basing tactical aircraft ashore, if basing is possible in these areas, as opposed to basing tactical aircraft at sea. Could you comment on operations in these areas—under the most hostile conditions—with the concentration of at least four carrier battle groups?

Admiral **McDonald**. [Deleted.]

Questions Submitted by Senator Gary Hart

AIRCRAFT CARRIERS

Senator **Hart**. If only one *Nimitz* were authorized in fiscal year 1983, what would it cost assuming:

A. It were the last *Nimitz* to be built?

B. A follow-on *Nimitz* were planned?

Admiral **McDonald**. I understand these questions have also been requested of Commander, Naval Sea Systems Command. I will defer to their expertise.

Senator **Hart**. How many of the elements funded by the long-lead funds provided last year can be used by existing *Nimitz* class carriers as spare parts?

Admiral **McDonald**. All elements funded last year by long-lead funds for nuclear components can be used as spare parts on *Nimitz* class carriers.

Senator **Hart**. What is the best estimate of the cost of the lead ship of a class of 40,000 ton light carriers?

Admiral **McDonald** The best estimate for the cost of a lead ship of a 44,591 ton light carrier class (Study 45) is $1,920M.

Senator **Hart**. What is the best estimate of the cost of follow-on ships of that same light carrier class?

Admiral **McDonald**. The best estimate for a follow-on ship of a 44,591 ton light carrier class (Study 45) is $1,560M.

Senator **Hart**. Do the *Nimitz*-class carriers requested for fiscal year 1983 have the "Option 12" protection features discussed in the Sea-Based air study?

Admiral **McDonald**. Yes, the "Option 12" protection features addressed in the Sea-Based Air Study are included in the ship characteristic of both CVN 72 and CVN 73.

Senator **Hart**. Does the last *Nimitz*-class carrier to be funded, now under construction, have the Option 12 protection features?

Admiral **McDonald**. CVN 71, now under construction, is the first CVN to include these features.

Senator **Hart**. What are the differences, if any, among these three carriers, and what do those differences cost?

Admiral **McDonald**. CVN's 71, 72 and 73 have identical ship characteristics.

Questions Submitted by Senator John C. Stennis

ALTERNATIVE BATTLE GROUP CONCEPTS STUDY

Senator **Stennis**. Admiral Walters, please provide me a copy of the Alternative Battle Group Concepts Study that you mentioned on the chart in your briefing.

Admiral **Walters**. I will provide that study under separate cover.

AIRCRAFT CARRIERS

Senator **Stennis**. Admiral McDonald, in 1978 the Navy completed a study on alternative carrier designs. In that study the Navy identified several features associated with the CVN that if improved would significantly enhance the survivability of the *Nimitz* class carrier. The study identified the most survivable carrier as option 12. Could you furnish for the record the survivability enhancement features for the CVN's identified in that option and specify which of those features will be incorporated on the CVN's 72 and 73.

Admiral McDonald. [Deleted.]

LHD-1 PROCUREMENT ACCELERATION

Senator Stennis. Admiral Fowler, the Navy shipbuilding plan provides for one LHD-1 in 1984 at an estimated cost of $1.3 billion. Could you give me an estimate of the cost of the LHD-1 if we were to procure it in 1983 instead of 1984?

Admiral Fowler. It will not be possible to accelerate the design development of the LHD in order to permit a fiscal year 1983 procurement.

CVN

Senator Stennis. Admiral Fowler, the Navy claims savings of about $750 million resulting from buying two CVN's in 1983 versus the traditional method of buying CVN's. Approximately $300 million of that is a result of reduced escalation or inflation. I understand though that the base line against which these savings are computed assumes procuring 1 CVN in 1984 and 1 CVN in 1986. I would like to know what the savings associated with procuring two CVN's in 1983 would be when compared to buying 1 CVN in 1983 and the second in 1985 with long lead funding in 1984. Also, what the saving would be when compared to buying 1 CVN in 1983 and 1 in 1984. Could you give me these figures now or at least furnish them for the record by Monday morning?

Admiral Fowler. I will be happy to forward the material to you under separate cover.

Senator Denton. Thank you, Admiral.

This hearing stands in recess.

[Whereupon, at 12:35 p.m., the subcommittee was recessed, to reconvene at 2 p.m. the same day.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

FRIDAY, MARCH 19, 1982

U.S. SENATE,
SUBCOMMITTEE ON SEA POWER AND FORCE PROJECTION,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

AIRLIFT PROGRAMS

The subcommittee met in open session at 1:58 p.m. in room 224, Russell Senate Office Building, Senator William S. Cohen, chairman, presiding.

Present: Senators Cohen, Jackson, Nunn.

Staff present: Francis J. Sullivan, minority staff director; L. Wayne Arny III, Robert S. Dotson, James R. Locher III, José E. Martinez, professional staff members; Mark B. Robinson, research assistant; Kathleen L. McGuire, staff assistant.

Also present: George Kohl, assistant to Senator Humphrey; Jim Dykstra, assistant to Senator Cohen; Paul Schreiber, assistant to Senator Denton; Don Imgram, assistant to Senator Quayle; Robert Nichols and Will Smith assistants to Senator Jackson; Gray Armistead, assistant to Senator Byrd; Arnold Punaro, assistant to Senator Nunn.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator COHEN. The subcommittee will come to order.

For several years, there has been a general consensus that the current U.S. airlift capabilities are inadequate to meet the U.S. national security objectives. There has been, however, substantial disagreement as to what programs should be undertaken to correct this deficiency.

In late January this year, the Department of Defense announced its recommendation that 50 C-5B and 44 KC-10 aircraft be procured as quickly as possible to alleviate the shortfall in military airlift. Understandably, this recommendation has perplexed many defense analysts in light of the Department's previous strong preference for the C-17 aircraft over the C-5B, and the Department's zigzags on KC-10A procurement during various stages of consideration of the fiscal year 1982 defense budget.

The subcommittee is anxious to hear from the witnesses the explanation of these sharp program reversals.

Testifying today are General Allen, Commander in Chief of the Military Airlift Command; Mr. Mosemann, Deputy Assistant Sectary for Logistics, and Brigadier General Bowden, the Deputy Director of the Directorate of Logistics Plans and Programs. On behalf of the subcommittee, gentlemen, I welcome the witnesses and those who accompany you. We are particularly pleased that General Allen is here to provide his expertise on the important airlift issues.

The task before the subcommittee today is to assess the soundness of the airlift acquisition strategy proposed by the fiscal year 1983 authorization request and supporting changes recommended in the fiscal year 1982 program. In this assessment, the key issues, all of which I think must be comprehensively addressed during today's hearing, would include the following:

Plans for multiyear procurement of the KC-10's.

Alternative programs to procurement of the C-5B's, especially the acquisition of existing and/or new 747's. I suspect that Senator Jackson will arrive momentarily to make a brief statement in this regard.

Deferral of expenditures for the CRAF enhancement program until fiscal year 1984.

The proposed R. & D. program for the C-17 aircraft.

The subcommittee also desires to hear testimony on the administration's legislative proposal to provide authority to enter into cooperative military airlift agreements with the allied countries.

General Allen, I think it would be most useful for the subcommittee to hear your statement first, followed by Mr. Mosemann and then General Bowden. I believe that today's hearing can be conducted in open session without compromising any national security issues. At the very end of the hearing there may be one item we will take up in closed session, but I think for the most part we will proceed in open session.

There are no other members present. When Senator Jackson does arrive, I think he wants to make a brief opening statement and we will defer to him at that point.

General Allen?

STATEMENT OF GEN. JAMES R. ALLEN, COMMANDER, MILITARY AIRLIFT COMMAND

General Allen. Mr. Chairman, I welcome the opportunity to be with you today to discuss the airlift mission and the capability of the Military Airlift Command.

Now, I am the first to recognize that within the overall mobility posture of the Nation there are three legs—and I might state incidentally, I addressed a good part of my opening statement in more detail in the classified statement for the record. I will just summarize a few points now.

AIRLIFT, SEALIFT, AND PRE-POSITIONING

Those three legs are airlift, sealift, and pre-positioning. Now, the key factors associated with those three legs are time and volume of delivery. Airlift is rapid and is flexible, but it is limited in volume.

Sealift provides great volume but cannot get there in the critical early days.

Pre-positioning, of course, assists both timing and volume but at the same time it reduces flexibility and sometimes it is difficult to know exactly where one actually needs to do the pre-positioning.

A final leg which must be considered is also the intratheater transportation system, both ground and air because it is what links the other three modes.

Now, the Military Airlift Command with regard to the airlift mode deploys and supports the employment of almost all of our fighting elements within the Department of Defense. We provide airlift, air-medical evacuation, rescue and recovery, mobile weather assistance, and of course our audiovisual service.

MAC's readiness capability is good as far as peacetime exercises and minor contingencies are concerned, and our people, consisting of trained, dedicated professionals, demonstrate this on a daily basis.

With regard to a major contingency situation, however, we have serious deficiencies. We have constrained utilization rates as a result of inadequate supplies of spare parts, and we have a major short-fall on overall and particularly out-sized airlift capability.

Now, our priorities addressing these various deficiencies go in the following order:

No. 1, is to look after our people. The key to anything we do is the retention and availability of a pool of experienced, skilled personnel.

PAY AND BENEFITS PACKAGE

I would like to express our appreciation to the Congress for actions associated with the pay and benefits package of last fall and the previous year, it has helped considerably and I can give a specific on that. For 20 months preceding last January, we saw a continuous decrease in the number of skilled maintenance personnel in the Military Airlift Command—a gradual decrease, month by month, in what we call our 7-level skilled technicians.

In January—and this is too early to say a real trend has happened—but in January that turned and we saw a small increase. In February we saw a small increase. I think that is directly attributable to the pay and benefits package along with, of course, the problems in the civilian economy today; it is a combination of the two.

Senator **Cohen**. How does it impact on pilots?

General **Allen**. On pilots the same thing is true. Our trends are going up. Of course, within the Military Airlift Command in particular there is a direct inverse correlation between our retention and the health of the commercial airlines. When the airlines are hiring, our retention is low. When the airlines are furloughing, our retention is high. Right now our retention is high.

I do think however, that it is important to recognize that we do not yet know whether these improved trends can be sustained through a turnaround in the economy. I do not think that we should feel like we have really turned the corner on this problem. There are some other things that are needed. One of these things is to insure that we maintain the degree of pay comparability that has been attained with the last couple of pay raises.

Another thing which would be helpful would be a CHAMPUS dental plan. We have some problems, some severe inequities, associated with the entitlements, associated with PCS moves of our personnel. Alleviation of those inconsistencies would be useful.

SPARE PARTS

Next, turning to the hardware portion of our mission, our next priority is to realize the full potential of the resources that have been provided to us by the Congress and by the American people.

One of the aspects of realizing the full potential is adequate spare parts. Now, we are very grateful for the actions by the Congress in 1981 and 1982 in funding spare parts. We have further requests in for this year and next year. Unfortunately, the lead time on those spare parts is such that we are not feeling the effect of that yet. The average lead time for these spare parts is about 2 years. In some cases, such as engine compressors, the lead time is as much as 46 months.

So, it takes a considerable period of time after the money is allocated and the contracts have been signed before we actually see the increased capability.

Similarly, to realize the full potential of existing assets, we need to insure that we have adequate command and control, ground handling equipment, materials handling equipment, and things of that nature. That is all in the program and we solicit your support.

Training and flying hours are essential. Right now we are doing reasonably well in that area. We are right on the margin as far as the C-5's are concerned. The limitation there, of course, is the wing of the C-5 and we cannot increase the utilization until we complete the wing modification. As we complete that, starting next year, we will be asking for an increase in flying hours in order to provide better training for our people.

The 141 stretch program we are very proud of. We will finish that program by this summer. It is coming through, I am pleased to report to you, ahead of schedule and below projected costs.

The C-5 wing mod has now started; we put the first airplane in on the 28th of last month. That airplane will come out in March of next year. The total program will be completed in 1987. It will provide us a substantially increased capability.

After completing all of these items, however, there is still a major shortfall in our overall strategic airlift capability. Accordingly, a decision has been taken to undertake new production of the C-5B, 50 new aircraft, as you mentioned in your opening statement, Mr. Chairman, and a decision concurrently has been taken to take advantage of the favorable cost options of additional KC-10 procurement, 44 additional aircraft.

I strongly support both of those measures and I urge you to support those as well.

Along with that, neither of those programs will satisfy the total shortfall of intertheater airlift capability. Neither of those programs will address the shortfall of intratheater airlift capability.

And neither of those programs will provide a potential replacement for the C-141's and C-130's in the outyears, around the year 2000.

For that reason, we encourage your support of continuing at this time a minimal level of research and development on the C-17 program.

RESCUE AND RECOVERY SERVICE

Finally, although it has not been mentioned previously, our rescue and recovery service is old, is antiquated, and we have not been paying, over the last several years, quite enough attention to it.

I liken the rescue and recovery service to an automobile insurance policy, the inclination is not to pay much attention to it until you have an accident and then you get out the policy and read the fine print, and wish you had more coverage.

In this case, when you get out and read the fine print, there will not be time to get new coverage. We need to get that additional coverage now.

For that reason, we are proposing to piggyback on the Army UH-60 program, the Army Blackhawk, and modify it somewhat into a night adverse weather rescue vehicle. We are very enthusiastic about that program; we solicit your support.

Mr. Chairman, I will be happy to respond to any questions you may have.

Senator COHEN. Thank you, General Allen.

At this time I would yield to Senator Jackson.

Senator JACKSON. Mr. Chairman, I have just a short statement and some questions.

With regard to the recently announced decision by the Department of Defense to purchase C-5's and KC-10's, I believe that there is considerable cause for the Congress to question the methodology and the wisdom of the proposal. I hope that through the hearing today and following hearings we can explore with the Department and the Air Force the requirements, the costs, the schedules and the capabilities of various options to meet the enhancement in our force projection necessary to deter a conventional threat anywhere in the world.

In spite of the general need to enhance our military posture, we do not have the budgetary luxury of procuring capabilities beyond clearly defined military requirements. We must make the difficult decision to obtain sufficient capability to meet a challenge wherever it might arise with the most cost-effective approach.

I found in reviewing the airlift decision that there were many questions which are not addressed adequately in the information made available to me. In fact, in light of the $11.8 billion in direct costs of the decision, I am surprised at the limited amount of analytic information that has been supplied to support the decision.

[The information follows:]

ALTERNATIVES IN UTILIZATION OF EXISTING HARDWARE

Yes, there are several alternatives, some of which are currently used to an extent. Under certain circumstances, the capability of the C-5As could be increased through the use of in-flight refueling and/or more enroute stages. Dedication of all C-5As to a given contingency without regard to worldwide commitments, would also provide a slight increase in outsize deployment capability. Disassembly of selected outsize equipment and/or the reduction of loading clearances to allow it to fit on other airlift aircraft would reduce the outsize airlift requirement. The Department of Defense prepositioning programs have reduced the amount of outsized equipment that must be airlifted to potential conflict areas.

None of these alternatives is without operational penalties in terms of flexibility, deployed firepower and unit closure which have been taken into consideration in planning new aircraft procurement.

Senator Jackson. I think the best way, Mr. Chairman, to highlight the doubts that I have about this decision is through interrogatories which address the fundamental assumptions on which the need for airlift enhancement must be based.

What are the necessary military capabilities to achieve adequate force projection to potential trouble spots throughout the world?

[The information follows:]

Military Capabilities To Achieve Adequate Force Projection

Force projection dictates the need for a balanced mobility force of airlift, sealift, and prepositioning programs that will permit a rapid, independent response to a crisis at any location in the world. These mobility programs should be capable of sustaining independent operations in the crisis area until the conflict can be terminated on terms favorable to the United States.

Airlift mobility forces must provide a rapid deployment and employment capability of combat units to and in the battle area. Rapid establishment of sea and air lines of communication is required to insure a favorable termination of hostilities.

Senator Jackson. How much of the force projection should be derived from airlift and how much from sealift? How much can prepositioning of equipment reduce both airlift and sealift requirements?

[The information follows:]

Force Projection Derived From Airlift

Force Projection modes are driven by scenario and sensitive to the environment of each contingency area. The Congressionally Mandated Mobility Study (CMMS) identified the following pre-positioning to reduce airlift and sealift demands: (1) six divisions of POMCUS in NATO. (2) Maritime pre-positioning ships for three USMC Brigade-sized air-ground task forces for Southwest Asia (SWA). (3) 130,000 tons of ammunition and resupply in SWA. Combat movements are based upon both size of force to be moved and the distance to move. The CMMS recommended the addition of the following to provide balanced force projection capability. (1) 25 million-ton-miles (MTM) of airlift capability above current level (20 MTM above an assumed baseline). (2) 100,000 tons of RO/RO shipping. Key to force projection equation is force closure requirements. Sealift carries a majority of the requirement. Airlift must be capable of closing those forces required before sealift becomes effective (both from CONUS and theater precontingency locations).

Senator Jackson. Given a defined airlift requirement, how do we optimally utilize existing inventory to meet the requirements?

[The information follows:]

Optimize Existing Inventory

The requirement is characterized by type of cargo (bulk, oversize, outsize), required delivery date, and movement priority. Then available airlift assets are reviewed to determine which type of weapon system can deliver the cargo in a timely manner.

Senator Jackson. What is the real shortfall in our capability under various scenarios as set forth in the Congressionally Mandated Mobility Study? How much of this shortfall can be met by Civil Reserve Air Fleet capabilities and how much must be met by new procurement of aircraft? How much of the shortfall is clearly incapable to haul outsized equipment?

[The information follows:]

SHORTFALL UNDER VARIOUS SCENARIOS

The CMMS baseline was 45 MTM/D. It recommended adding 20 MTM/D above the baseline but this amount does not meet the requirements of any of the CMMS scenarios. Using the least demanding scenario, 83 MTM/D was required. The current capability is 29 MTM/D, of which approximately 13.5 MTM/D is CRAF capability. The programmed airlift capability (by 1989) is 52.8 MTM/D.

There is still a deficit of some 30 MTM/D to meet the least demanding scenario requirements. The CMMS stated that to avoid an outsize constraint, at least half of the added capability must be outsize.

Senator **JACKSON**. Are these alternatives in the utilization of existing hardware which reduce the amount of outsized requirement which must be met with new aircraft procurement? Can we meet the preponderance of the requirement for additional aircraft procurement by acquisition of either new or used commercial aircraft currently in production at costs drastically below the requirements to procure new military aircraft?

Mr. Chairman, I believe that a careful scrutiny of the information necessary to answer these questions will show that the need for airlift capability for outsized equipment is sufficiently limited not to warrant at the present time procurement of new military aircraft.

Instead, I believe that the existing inventory of aircraft which can handle outsized equipment is sufficient—in combination with pre-positioning and sealift capabilities—to lead to the firm conclusion that the most cost-effective way for the Nation to increase its airlift capabilities is through procurement of commercial aircraft currently in production or available from the surplus market of aircraft from the airline industry.

[The information follows:]

MEET THE PREPONDERANCE OF REQUIREMENT BY ACQUISITION EITHER NEW OR USED COMMERCIAL AIRCRAFT

The Air Force has well documented shortfalls in both outsize and oversize/bulk cargo airlift. None of the current procurement alternatives will eliminate the outsize or the oversize/bulk shortfall. The commercial aircraft offerings are less costly than current military airlifters. However, they offer only a portion of the solution to our oversize/bulk shortfalls; they offer virtually no capability to move outsize cargo. The military aircraft alternatives offer the Air Force an opportunity to reduce the outsize cargo shortfall while providing additional oversize/bulk capability.

Senator **JACKSON**. I hope that the committee will give careful consideration to this issue because we can enhance our airlift capability substantially in the next 3 fiscal years through this avenue at a fraction of the costs. The savings to the defense budget in this critical 3-year period are too large to be ignored.

Mr. Chairman, I would like permission to include in the record at this point a letter that I sent to the Secretary of Defense today on this subject. I would like, if we could get some answers—not now——

Senator **COHEN**. I hope we would get some answers even today.

Senator **JACKSON**. Yes; but I am not asking to take up this time with my series of interrogatories.

But I do think, Mr. Chairman, that in light of the budget pinch that we are in, that this is one area where we can meet our goals and objectives and save a lot of money in light of other options that are available; and in light of the fact that we are going to have to make some cuts. I think that is almost a unanimous judgment. I do not mean in this area alone, but in the defense budget.

Thank you, Mr. Chairman.

Senator Cohen. Thank you, Senator Jackson. That letter will be made part of the record.

[The letter referred to follows:]

U.S. Senate,
Committee on Armed Services,
Washington, D.C., March 19, 1982.

Hon. Caspar W. Weinberger,
Secretary of Defense,
The Pentagon, Washington, D.C.

Dear Mr. Secretary: I want to thank you for your letter of March 1, 1982 setting forth a comparative analysis of some airlift options in response to my request. I believe that the information you have provided, while not exhaustive, is nonetheless an important contribution to the Committee on Armed Services' hearing record as we approach mark-up of the fiscal year 1983 DOD authorization bill.

I must say that I am disturbed by the methodology by which the Department arrived at its decision on how to achieve enhancement of our airlift capability. I do not understand your statement that the B-747 was given consideration as an alternative to the C-5 or the C-17. The Ad Hoc Committee on Airlift Enhancement prepared its document entitled "Department of the Air Force Airlift Enhancement Program" which explicitly omitted any detailed consideration of the B-747 for what seems to have been two relatively unsubstantiated arguments. While your submission for the Armed Services Committee record sets forth a number of reservations about the B-747, I do not find them persuasive because of the use of these aircraft world-wide for commercial operations and the commitment to use these aircraft in the Civil Reserve Air Force. Additionally, there are optional modifications available to the standard configuration of the B-747 to meet any particular requirement.

Your insert for the Committee's hearing record contains a table with a column providing your estimates of the comparison of the B-747 to the other options. It is unfortunate that the same information was not contained in the Ad Hoc Committee document. Without the inclusion of this column in the Ad Hoc Committee document, I fail to see how the B-747 could have been fairly evaluated against the C-5 and the C-17. I also found it curious that according to GAO, there was no formal sign-off by the Members of the Ad Hoc Committee to their document which could call into question the level of concurrence by Members of the Committee.

When one does compare the columns in your table containing the B-747, it is easy to see how the B-747 not only constitutes an option, but in fact is preferable in most regards to either the C-5 or the C-17. The most clear preference for the B-747 is with regard to cost and delivery schedule. I understand that the Boeing Company has made a fixed price proposal to the Department of Defense for new B-747Fs at a price of $58 million which is in direct conflict with the $70 million price in your table. This price is in 1981 dollars which makes it consistent with the unit acquisition costs of the other options listed in the table.

With regard to the estimated 20-year operations and support cost figures, I understand that the commercial experience with the B-747s leads one to a cost estimate of $3.8 billion rather than $6.8 billion for 40 planes. The discrepancy between these figures should be easily resolved due to the extensive experience with this B-747. Alternatively, the Department of Defense can purchase used commercial aircraft, such as the B-747s or the DC-10-30s from the surplus currently available on the market and from airlines at further cost savings to the Federal government.

In my view, the near-term shortfall in the airlift capability can be most readily achieved by buying either new or used B-747s and DC/KC-10s instead of the C-5 aircraft. I believe that a straightforward analysis will show that we can save not only $7 or $8 billion in purchase costs, but also substantial additional savings in the 20-year operations and support costs. Most importantly, there are significant budgetary savings in the next three fiscal years with this approach, and yet many more planes will be delivered in that period. A side benefit from any purchase of used aircraft is that it could assist the troubled airline industry which is having difficulty with cash flow and with meeting payments on loans held by the nation's banks.

The only justification for buying C-5s that merits any consideration is the possible need for additional outsize airlift capability. I do not believe that the congressionally mandated mobility study with its various scenarios for meeting RDF needs supports the conclusion that more outsize capability is required than can currently be met with the existing fleet of 77 C-5 aircraft. Moreover, a preliminary analysis by the GAO indicates that many citations by the Ad Hoc Committee report of the congressionally mandated mobility study, as a basis for its analysis, are in fact not contained in or substantiated by this study. Also, as the GAO has suggested, the C-5 does not really address the crucial element of our airlift shortfall for outsize equipment which is the intratheater, austere airfield requirement. To the extent that this mission is necessary and to the extent that a follow-on aircraft to replace C-141s and C-130s is needed in the 1990s, the case for the C-17 seems clearly stronger than for the C-5.

Based on these considerations, I cannot support the sole source procurement of 50 additional C-5 aircraft when far less expensive options are available that will furnish the necessary airlift enhancement years sooner. I urge you to reconsider the pending proposal and to submit a new request to the Congress based upon the procurement of commercial aircraft currently in production as opposed to reopening the C-5 production line. As part of any new submission to the Congress, I would urge that if you propose to purchase KC-10s, that the quantity to be purchased under the existing contract accurately reflect the terms of that contract for which the fixed price expires on December 1, 1982, according to information provided by the GAO.

I hope that the Department and the Congress can work together to make the correct decision on this important issue.

Sincerely yours,

Henry M. Jackson,
U.S. Senator.

Senator **Cohen**. Perhaps we could begin by following up the general line of questions put by Senator Jackson.

AIRLIFT AUGMENTATION PLAN

Last year in the conference report concerning DOD authorization for fiscal year 1982, Congress requested a comprehensive study, an Airlift Augmentation plan, by DOD, and, in fact, we fenced certain airlift procurement funds until we received the study. To date we have received nothing.

Mr. Mosemann, perhaps you could explain why we have not received it, when you expect we can receive it.

Mr. **Mosemann**. Yes. I guess my response to that is to distinguish between what we would refer to as a near-term strategy to improve our readiness posture quickly, and a longer term strategy.

We feel that the Secretary of Defense has in fact detailed a comprehensive near-term, what I would call "Improve Readiness Now" airlift acquisition strategy in both his written statements for the record and in oral testimony on this fiscal year 1983 budget.

This acquisition strategy is to procure 50 C-5B's and 44 KC-10's, both under fixed price escalation contract arrangements. This includes a plan to keep the C-17 option open for the outyears.

We are concerned that with respect to the longer term we need to assess the benefits of the short-term program that I described very briefly—and we will talk more about it in detail in my statement—as well as the significant shortfall in intratheater airlift.

The Department of Defense has commissioned the Institute for Defense Analysis to specifically address the intratheater airlift requirement. In addition, the respective military services under the coordination of the Joint Chiefs of Staff are also addressing the intratheater airlift requirements.

We plan to submit as a part of our fiscal year 1984—not 1984 but 1985—budget submission a long-term strategy that we believe will take us into the 21st century, and that strategy will address both the intratheater and remaining intertheater airlift requirement.

Senator **Cohen**. Well, let me say with all due respect, Mr. Mosemann, that the committee was expecting a document from the Department of Defense. It has not been received to date, and I suspect we are going to have the same kind of a fencing problem that we had in fiscal year 1982 until we get something more than simply the short-term projection. We are not going to wait until next year to start making authorizations for the near term.

I think the question is, what are we going to do to integrate near-term needs with the long-term goals. I think to do it on simply a year-by-year basis is going to meet with some resistance. That is just a projection of my own.

I should stop my questions. Do you have an opening statement you want to make?

Mr. **Mosemann**. Yes, I do.

Senator **Cohen**. General Bowden, do you want to speak also?

General **Bowden**. Sir, I would recommend I insert my statement for the record, and when it is the turn to discuss the bare-base and pre-positioning equipment I have some photos that describe the program.

Senator **Cohen**. Thank you very much. Mr. Mosemann.

STATEMENT OF LLOYD K. MOSEMANN, DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE, LOGISTICS

Mr. **Mosemann**. Yes; we do have a statement that is submitted for the record, but in addition I would like to just highlight some of the significant portions of that statement.

I am, as was mentioned, the Deputy Assistant Secretary of the Air Force for Logistics. One of my responsibilities is transportation and airlift in support of the Secretary of the Air Force's role as the DOD Single Manager for Airlift.

The DOD airlift program that we have submitted as part of the Air Force's fiscal year 1983 budget is, as was indicated, near-term oriented, to get the most readiness, at a reasonable cost, in the shortest possible period of time.

Our overall near-term mobility strategy includes the items that have just been mentioned by General Allen, as well as wing rehabilitation and modification for some C-130's and the acquisition of 18 small off-the-shelf commercial aircraft as a part of the European Distribution System.

All of these initiatives that are a part of this package, except for the C-5B, the expanded KC-10 procurement, and the European Distribution System, are in some sense on-going initiatives. The European Distribution System is receiving visibility for the first time in this budget, as is the C-5B and the expanded procurement for the KC-10.

As has been mentioned by General Allen, airlift is not the only form of lift. Certainly, more moves by sea than moves by air. But airlift is the most visible, responsive and flexible element of our mobility resources where time is a factor. Its primary role is to project and to sustain combat forces until other means of transportation can deliver the required follow-on support. In many situations airlift is the only means of responding rapidly to certain geographical areas or where the threat develops very unexpectedly.

We have had a series of 17 mobility studies over the last 5, 6, 7 years, culminating in the congressionally mandated mobility study that has already been referred to.

All of those studies have been in agreement in identifying a significant shortfall or deficit in our required airlift capability. To the extent that there have been differences between them, it has been with respect to how large that deficit or shortfall is.

AIRLIFT CAPABILITY

The congressionally mandated mobility study recommended immediate action to add 20 million ton-miles per day of intertheater airlift capability over and above the fiscal year 1986 baseline. That baseline, as it was envisioned in the mobility study, will not materialize. In fact, the fiscal year 1986 posture will be some 5 million ton-miles per day below what the CMMS study postulated.

Senator **Cohen**. Excuse me for interrupting. Can you tell me how you came up—not you, but Dr. Keel—came up with an estimate that out of that 20 million ton-miles per day capability, at least 10 million had to be outsized? Where did that figure come from?

Mr. **Mosemann**. That came from the CMMS study.

Senator **Cohen**. That came from the CMMS study?

Mr. **Mosemann**. Yes; as a matter of fact, the expression is, 10 million ton-miles per day of C–5 equivalent capability.

Senator **Cohen**. I have difficulties trying to reconcile what Dr. Keel's letter said to the committee. It said, "Under most scenarios the outsized portion of the airlift requirement is typically on the order of 35 to 40 percent of the total airlift capability."

Based on the congressionally mandated mobility study, the outsized requirement does not appear to be this large. In fact, for the most trying scenario in the study, the Persian Gulf, it does not appear to be more than 16 percent. I am wondering where the 35- to 40-percent outsized came from.

Mr. **Mosemann**. I would reconcile it a little bit differently because the recommendation, which is the bottom line of the CMMS study, is that we buy 50 percent of the 20 million ton-miles as outsized, which would be 10 million ton-miles.

Now, basically, the number you referred to, the 20- to 30-percent outsized, refers to an absolute figure. In other words, if you could—as you can in theory—be sure that every C–5 is loaded every time completely with outsized capability, then you would need the 30, whatever that number was.

Senator **Cohen**. It is 35 to 40 percent.

Mr. **Mosemann**. The 35 to 40 percent. That number gets considerably closer to 50 percent or perhaps even higher when you recognize that many times we cannot fill the whole airplane with outsized cargo, but that we have to fill up the remaining space with bulk or oversized requirements. That is the reason for that discrepancy.

As a matter of fact, I was just going to add that the airlift shortfall is probably greater than that envisioned in the congressionally mandated mobility study when you consider the current defense guidance requirements, both with respect to a NATO scenario and to a Southwest Asia scenario.

We have stressed the need for intertheater airlift capability consistently. If you go back and read the mission element needs statement for the C-X aircraft, in that statement it is very specific that we would like an airplane that can get into shorter fields, but that if there is a compromise required or if there is a trade-off, we will trade off in favor of intertheater capability for that is the primary concern.

It is somewhat obvious, I believe, that in addition to the pure intertheater outsized capability being available or more obtainable in the near-term, that if you cannot get the material into the theater you do not need aircraft to move it around once it is in the theater, since it would not be there.

Our near-term plan is to procure, as has been mentioned, an additional 50 C-5B's and 44 KC-10's. We are also continuing, subject to congressional approval, a low-level R. & D. effort with respect to the C-17 capability.

I believe that a recent letter from General Jones, the Chairman of the Joint Chiefs of Staff to the Secretary of the Air Force in his role as the DOD Single Manager for Airlift, succinctly summarizes the situation:

> I support your decision on near-term airlift acquisition and further intend to continue emphasizing the need to program a more complete airlift posture for the 1990's. In this time frame we must be ready to begin replacing the C-141 and C-130 aircraft. We must pull together and I support your efforts.

In determining the best near-term solution for the airlift problem, we consider the acquisition of seven different aircraft. In the statement that we have submitted for the record this decision process is described both in terms of an illustrative diagram and also in a narrative description.

KC-10

The bottom line of the KC-10 decision process includes the procurement of 44 KC-10's as bulk and oversized cargo carriers and as airlift refuelers.

As you may know, we have an existing very favorable contract for the KC-10. That contract was the result of an earlier head-to-head competition between the Boeing 747 and the McDonnell Douglas DC-10 in the development and selection of what was then known as the advanced tanker cargo aircraft, or ATCA.

The KC-10 capability is unique. It is a very efficient carrier of bulk and oversized cargo. It can be used to extend the range and payload of the C-141 and the C-5 transport aircraft by means of aerial refueling. It can deploy tactical fighter squadrons by carrying personnel, equipment, and simultaneously refueling the deploying aircraft.

In fact, even when it is employed in carrying channel cargo, or the mainstream cargo back and forth to the theater, it can simultaneously refuel other cargo airplanes. In other words, the KC-10 satisfies our short-term requirement for bulk, oversized, and airlift refueling capability.

Now, with respect to the requirements for outsized capability, the C-5B, the C-17, and the B-747 were considered as the most viable alternatives.

With respect to the 747, its major problem relates to loading, particularly the loading of outsized cargo. It does not provide drive-on, drive-off loading capability and in fact, for many outsized loads, the door clearances are on the order of 1 to 2 inches. Much of this outsized equipment which the 747 can theoretically carry requires special handling and/or major disassembly such as removing the rotors from helicopters, snubbing wheels, and loading the equipment on special fixtures.

C-17/C-5B

In comparing the C-17 and the C-5B, we found that the C-5 delivers more capability sooner and at less program cost. Given the seriousness of our airlift shortfall, the C-5B is clearly the more attractive near-term option.

For example, by the end of fiscal year 1987, we will have delivered 17 more C-5B's than we could have delivered C-17's, and that assumes total program concurrence for the C-17. This, in effect, gives us 3.8 million ton-miles per day more capability in the near term.

The early availability of the C-5B over the C-17 is made possible by the existence of government-owned tooling and engineering drawings valued at more than $750 million, and for many C-5 items qualified sources of supply.

The C-17, on the other hand, represents a new development with attendant research and development production, initial training, and additional operational start-up costs and risks.

In addition, we are proposing, subject to congressional approval, that a modest fiscal year 1982-83 C-17 research and development effort be continued with funds from the unobligated fiscal year 1981 C-X appropriation. This effort would focus on improvements included in the C-17 design which can be methodically developed to produce more efficient structures and more efficient energy use of both military and civil aircraft.

Specific areas to be investigated include low-speed power lift, engine core thrust reversing, winglet configuration, and cruise-drag estimates. Another possible area of investigation is the use of advanced structural material.

I would like to make one other comment about the C-5. The C-5 aircraft has operated under a shadow of criticism associated with its original cost-performance history. That was largely related to a very unique contracting arrangement which has never been repeated. These criticisms, unfortunately, have left the impression with some that the C-5 is a poor operational performer, whereas the facts are totally otherwise.

The facts are that in crisis after crisis, both civil and military, from Vietnam and the Israeli 6-day War, earthquakes in Turkey, famine in Africa, and to snow rescue in our own Northeastern United States a few years ago, the C-5 has delivered a wide variety of essential goods in place and on time.

For example, during the 1974 Israeli war, in just a few days 894 C-5 sorties were flown with a 96-plus percent reliability rate. Furthermore, the C-5 has a very low accident rate with no class A incidents reported in calendar year 1981 and a rate of only 1.1 incidents per 100,000 flying hours over the past 10 years.

I would also like to make reference to the Civil Reserve Air fleet which you mentioned, Mr. Chairman, in your opening statement.

Senator COHEN. Would you say that the department over-sold the advantages of the C-X last year? I did not hear those glowing statements made about the C-5. Senator Nunn may have some observations to make as we get into the questioning, but many of us asked questions about the proposed C-X for the past 2 years, and we were told that it was going to do many things. We kept raising the questions, "What about the C-5," and it seemed to get minimal treatment by DOD at that time.

Suddenly, you are coming here and singing the praises of this fine aircraft.

Mr. MOSEMANN. They are both fine aircraft. The difference is basically that, at the time we were here last year, and for that matter, up until just about 2 weeks before the President's budget went to the printers, it was not clear that the amounts of money required to support this kind of program that we propose would be available within the obligational authority that OSD had as its target for the fiscal year 1983 budget.

When it became clear that those amounts of funds would be available, we were asked to re-assess the relationship between the C-5 and the C-17 with respect to earlier delivery schedules. The fact of the matter is that notwithstanding some data that McDonnell Douglas might have given you——

Senator COHEN. They did.

Mr. MOSEMANN. I have a chart here that might demonstrate later what they have given you. But the point is that, notwithstanding that, with considerable program concurrency the C-5 can be made operational 2 to 3 years—and it is closer to 3 years—sooner than the C-17.

Frankly, the C-17 program, as some of us now envision it, could be a model procurement program in that we would eliminate concurency and do it in a very methodical way, including 2 years of preliminary design, which we see as fiscal year 1982 and fiscal year 1983, and 4 years for the development of a preproduction test article, which would bring us to a position of being able to produce that airplane on a virtually no-risk basis at the close of this particular decade.

There are many fine things that we can say about the C-17. It does provide an airdrop capability; it provides a low altitude parachute extraction system capability; it certainly is an intratheater, short-field landing and take-off kind of an airplane. But, given the tremendous size of the intertheater deficit, and given the earlier availability of the C-5, and, really, the commitment of this Administration to solve the near-term readiness problem in the near term, this really is the only logical solution.

But in no way are we implying that the C-17 is not a desirable aircraft, it is a very desirable aircraft.

Senator **Cohen**. But at one point you said that you were not aware of the required level of spending or budgetary authority that would be available for the near-term solution. What happens if you do not get that level of funding? Does that alter your assessment?

Mr. **Mosemann**. It would depend.

Senator **Cohen**. We are hearing a good deal of talk now about how much is going to come out of the Defense budget. Assuming that some does in fact come out of the Defense budget you are going to have to pare back those optimistic assessments of what you have. Will that change your conclusion?

Mr. **Mosemann**. Well, obviously, it would depend on how much it is pared back. I do not have any percentages with me, but with 5 percent or 10 percent the answer would be no. But if you start cutting deeper than that, I think the answer would be yes, we might want to reassess it.

CIVIL RESERVE AIR FLEET

Just to address the Civil Reserve Air Fleet quickly because, as you indicate, along with the C-17 we were extolling the virtues of the Civil Reserve Air Fleet program last year.

There are about 400 civilian aircraft in the Civil Reserve Air Fleet today that are committed to military use in an emergency. The problem is, most of those aircraft carry only passengers or crews. We, therefore, have more than sufficient capability to move all the people who would need to be moved in an emergency.

We considered, then, that we could look to these same civilian aircraft as a possible means of overcoming some part of the cargo airlift shortfall and that, frankly, is where that 5 million ton-mile per day discrepancy comes between what we now say we will have in fiscal year 1986 and what the CMMS study says we will have in fiscal year 1986.

It had been our plan to modify existing passenger aircraft owned by the airlines so as to make them cargo capable. Unfortunately, when we put out a recent request for proposals, viable offers were received from only three carriers, and those viable offers were for 49 DC-10-10's and 4 DC-10-30's.

Now, these viable offers were rejected for basically two reasons. The most notable of these is that the DC-10-10 is very range limited. It would require two refuelings on the ground in order to reach most of the crisis destinations that we are concerned with.

Second, and not insignificantly—I am not sure you will find this written anyplace—but our informal feel was that the cost of these CRAF mods would come in somewhere in the neighborhood of $15 million apiece, when the offers in fact were somewhat closer to $25 million apiece. Depending on how you calculate them, it could even be higher than that; we really felt we needed to revisit that particular issue.

We were already revisiting that issue, as a matter of fact, in the context of perhaps pursuing the KC-10 option before these additional funds became available.

747's

Senator **Cohen**. You mentioned there were three "viable" offers. I am not sure what the word "viable" entails. But it is my understanding that there are 747's floating around out there that the owners would like to transfer or convert and then transfer to the Air Force. You were looking for a fixed-price contract and you were unable to get it.

Does your meaning of "viability" exclude anyone who would not give you a fixed price? Is this what you mean by not viable as an option?

Mr. **Mosemann**. I guess, basically, that is the bottom line, but just to give you a little bit more detail. The CRAF contracts are somewhat unique, in that they involve a cooperative relationship between airlines and a manufacturer. Even though the bids in effect were coming from the airlines, the people who were calling the shots were the manufacturers.

Therefore, from the point of view of the offers that were made to us, there were significant differences between the risks that the airlines were required to absorb, as between the two approaches for the two different airplanes involved; that is, the 747 and the DC-10 family.

In terms of the conditions of the Military Airlift Command, our RFP that was on the street, only the offers received from the three carriers offering us the DC-10 family were responsive and therefore could be accepted under the terms of our procurement process.

Senator **Cohen**. What I am asking is, are you taking into account the life-cycle costs of modifying the 747's? You mean to say that would not be less expensive than procuring a new aircraft?

Mr. **Mosemann**. As a matter of fact, if we were considering buying the 747 as now proposed, the initial acquisition cost—the data I am looking at here has to do with the KC-10—but the initial acquisition costs for the 747 vis-a-vis the KC-10—and the 747 does not have tanker capability—is somewhat less.

But when you look at the 20-year ownership costs, both acquisition and operating costs of the two airplanes, we find that the 20-year program cost is the opposite. That is to say, about $5.6 billion for the KC-10 and about $8 billion for the equivalent capability in the 747.

CRAF PROGRAM

I do not have the numbers with me on the CRAF comparison of the life-cycle cost of the 747's and the DC-10's, but as I recall they were in about the same ratio.

I had just one other point to make on the CRAF program, and that is that we are not foreclosing the possibility of CRAF modifications in the future, either for existing aircraft or for new production of wide-bodied, long-range aircraft. We have tentatively budgeted in our program for fiscal year 1984 and beyond funds for this purpose.

It is our hope that the contracting authority that was provided in the fiscal year 1982 Defense Authorization Act, which authority was not available in time for the RFP's we had last year, that this could make a difference by reducing somewhat the risks for the airlines and thereby in any future CRAF effort make is possible for them to present us with a program that is less costly to the Department of Defense.

I would just like to make one other point for the record before I stop. That is that, though we did not mention it in our prepared statement, we do urge passage of H.R. 5327 which would legalize reciprocal arrangements for the use of airlift with our allies.

These arrangements not only provide us with some much-needed capability in some very out-of-the-way places such as Australia and New Zealand, but they also are important as a very significant symbol of our mutual security cooperation with our allies.

We are prepared to answer questions at this point.

PROCURING MILITARY EQUIPMENT

Senator **Cohen**. Mr. Mosemann, this is perhaps an irrelevant question to ask you, and I certainly will not get into it here, but we have been holding oversight hearings in the Government Affairs Committee, looking at the way in which we procure military equipment. I can recall a good deal of the testimony saying that we sometimes insist on the wrong kind of contract for the right kind of equipment. A classic case of that, as I recall, was the so-called Gorden Rule; in the procurement of our Trident submarine, we insisted on a fixed-price contract, and it was shown to be the wrong kind of contract for that particular ship, resulting in a large overrun for this situation.

I will not get into it here, but I think we have to look at that at a later time to see whether or not, by insisting on a fixed-price contract version on existing aircraft, we may not be doing the wrong thing. I do not know enough about it now, but it seems to me there may be some analogy with what has happened in the past shipbuilding programs may be happening here.

Mr. **Mosemann**. This is exactly what the authorization legislation gives us capability to do. We would still have a fixed-price contract for the actual cost of the mod. But the previous proposal would have been to give the airlines a lump-sum payment for everything but the fuel up front. That required the airlines to make some assumptions about their outyear operating costs and inflation.

The authorization legislation from last year permits us to pay that on a year-by-year basis as it occurs. So, yes, you are right, it would reduce the risk and in effect it is not a fixed-price arrangement.

ENHANCING CRAF PROGRAM

Senator **Cohen**. General Allen, given the need for immediate augmentation of the airlift, would you favor enhancing the CRAF program or deferring it to 1984 as is recommended?

General **Allen**. Well, I was very much in favor, Mr. Chairman, of enhancing the CRAF program at the time that we went into it.

However, as pointed out by Mr. Mosemann, we were somewhat disappointed by the types of responses we got from the carriers on the CRAF program.

Inasmuch as those responses had difficulties in the context of the types of aircraft that were offered and the price of those aircraft, my position clearly was to support the immediate buy of organic aircraft in lieu thereof.

I might add a point to what Mr. Mosemann was saying about the outsized requirement and the requirement for 50 percent of that 20 million ton-miles being in outsized capability. In simplistic terms, yes, 30 to 35 percent of the units to be moved, ground force units, consist of oversized equipment.

Senator **Cohen**. Oversize or outsize equipment?

General **Allen**. Outsize equipment, excuse me. Today, we are imbalanced within our present fleet. We have at the most about 20 percent capability to move outsize equipment. So, by procuring 50 percent of that additional 20 million ton-miles outsize capability, it puts the force in balance, if you will, with the requirements.

Senator **Cohen**. Mr. Mosemann, as I understand it, we have 60 KC-10 contract options. So far, 16 of the 60 have been procured. We had two in fiscal year 1979, four in fiscal year 1980, six in fiscal year 1981, four in fiscal year 1982, and DOD has included an additional two in the fiscal year 1982 supplemental.

The question I have is when do those contract options expire?

Mr. **Mosemann**. I believe it is December 1982. But we are at the moment wrestling with about 12 ways to exercise those options in a multiyear procurement mode as I discussed with Mr. Locher just before the hearing. We will do our very best to get our specific proposal over to you before your markup next Wednesday.

[Additional information follows:]

Expiration of Contract Options

We have one remaining option on the contract on which we may buy from two to 44 aircraft. This option expires 1 December 1982 and requires full TOA availability ($3.183 billion in the case of 44 aircraft). The multiyear alternative that we have chosen, which will enable us to spread the TOA over a 6-year period, will save an estimated $215 million over the budget profile.

We are currently staffing a multiyear with expanded advance buy procurement package through the Pentagon that will result in the procurement of the 44 KC-10's at an overall price over $215 million below the budget request. All possible action is being taken to ensure receipt by the Congress during markup.

Senator **Cohen**. That was what I was just going to suggest. We have a deadline coming up rather soon, and we would like to have the profile, at least, of what your plan is for a multiyear procurement.

Mr. **Mosemann**. We will do that, sir.

Senator **Cohen**. At the same time, you might give us an estimate of what cost savings would be involved if you proceed on a multiyear procurement basis.

We had an interesting presentation this morning dealing with our two aircraft carriers, saving about $700 million. I am sure we would be interested in seeing what you propose to save here.

Mr. **Mosemann**. Well, I think in this case the savings for multiyear are in effect going to be cost avoidance because by the nature of the contracts that we now have, what we are trying to do is take advantage of the contract we now have which is extremely cost favorable. Multiyear, we think, will enable us to do that.

Anything other than that would mean in effect departing from the terms of that contract which could cost us considerably more.

Senator **Cohen**. General Allen, just for the record, in your plan for long-range movement of bulk and oversize cargo, you include the commercial wide-body freighters, do you not?

General **Allen**. For the CRAF, absolutely.

Senator **Cohen**. And you still come to the conclusion that, based upon the figures you saw, the response from the commercial sector, this is not a viable option right now?

General **Allen**. That is correct. The types of aircraft offered at the price for those aircraft just was not a good buy.

Senator **Cohen**. Mr. Mosemann, I want to come back to the C-5's and the C-17's. And as I go along, I will yield at any time, Senator Nunn, if you have some questions along these lines; now, if you would like.

Senator **Nunn**. May I just ask a followup on the one you just asked, and I will defer right back to you.

Senator **Cohen**. Certainly.

Senator **Nunn**. You said it was not a good buy. Were you talking about the 747's?

General **Allen**. Well, the 747's were not offered under the terms of the RFP. The RFP required a firm fixed price. The 747's were not offered under a firm fixed price. So, they did not meet the criteria for the RFP.

The only aircraft that met the criteria for the RFP under the firm fixed price were the DC-10-10's and DC-10-30's that were described to you a few minutes ago.

Senator **Nunn**. Thank you, Mr. Chairman.

Senator **Cohen**. I would like to turn to C-5B versus the C-17 once again, Mr. Mosemann. In the written statement that I had from Dr. Keel, he said:

> The C-17 versus the C-5B decision was very dependent upon the amount of resources available for airlift procurements in the near term . . . When it became obvious that $2 billion could be made available in fiscal year 1983, and $3.6 billion in fiscal years 1984/1985, for airlift procurement, then the C-5B became the obvious choice.

[The statement referred to follows:]

Prepared Statement by Hon. Alton G. Keel, Assistant Secretary of the Air Force, Research, Development, and Logistics

To protect our global interests, the U.S. deploys some forces forward, pre-positions limited amounts of material, but maintains the majority of our forces and supplies at home. These home-based forces, supported by mobility resources, serve as a centrally located strategic reserve which can be rapidly projected anywhere in the world. Force projection and mobility forces will remain the cornerstone of our strategy to protect our national interests worldwide.

The timely arrival of forces may preclude the need to deploy large forces later to save or to recover lost territory and may prevent or limit damage to resources, territory and population we wish to defend. Consequently, programs that reduce early mobility shortfalls as noted in the CMMS are more valuable than those programs that improve delivery capability at a later date. The generic elements of mobility not only complement each other over time, but are also mutually supporting. Mobility forces are complementary and interdependent and must be kept in that perspective. Military planning therefore must be flexible and avoid too much reliance on any one option.

Airlift deploys personnel to marry up with pre-positioned equipment, as well as residual cargo, to complete pre-positioned unit equipment—high value/maintenance-intensive items (helicopters, communications gear, et cetera) that are too difficult and expensive to maintain in storage. For example, to fill out the Near Term Pre-positioned Ships (NTPS) brigade stationed at Diego Garcia requires 31 C-5, 115 C-141, and 31 CRAF B-747 sorties to move the 11,000 troops and 3,500 short tons of residual cargo. In addition, when prepositioning sites or ports are removed from the immediate operating area, airlift can provide intratheatre tranportation. Because the concept of pre-positioning equipment and airlift are synergistic and complementary, the combination of these two systems may produce a greater reduction in closure time than the sum of their reduction when considered separately.

Airlift is the most visable, responsive, and flexible element of our mobility resources. Its primary role is to project and sustain combat forces until other means of transportation can deliver the required follow-on support. In many situations, airlift is the only means of responding rapidly, because of either the geographic location or the speed with which the threat develops.

Existing airlift is seriously inadequate to meet the mobility requirements of our conventional war strategy. The Department of Defense has recognized in 17 major studies over the past several years that a significant airlift shortfall exists. The most recent of these studies, the Congressionallly Mandated Mobility Study (CMMS-1981) identified a significant airlift shortfall of at least 40 million ton miles per day in four representative scenarios. The CMMS recommended immediate action to add 20 million ton miles per day of intertheatre airlift capability above the fiscal year 1986 baseline. Since the fiscal year 1986 baseline assumed approximately five million ton miles per day of CRAF capability which does not yet exist, the actual deficit is approximately 25 million ton miles per day, of which at least 10 million must be outsize capability.

Recent studies have also pointed to a lack of outsize intratheatre capability and to a serious intratheatre airlift shortfall, on the order of 100 C-130 equivalents in Europe alone. Finally, there is recognition that the aircraft in the fiscal year 1986 baseline, most notably the intratheatre C-130s and the intertheatre C-141s, are nearing the end of their useful service life.

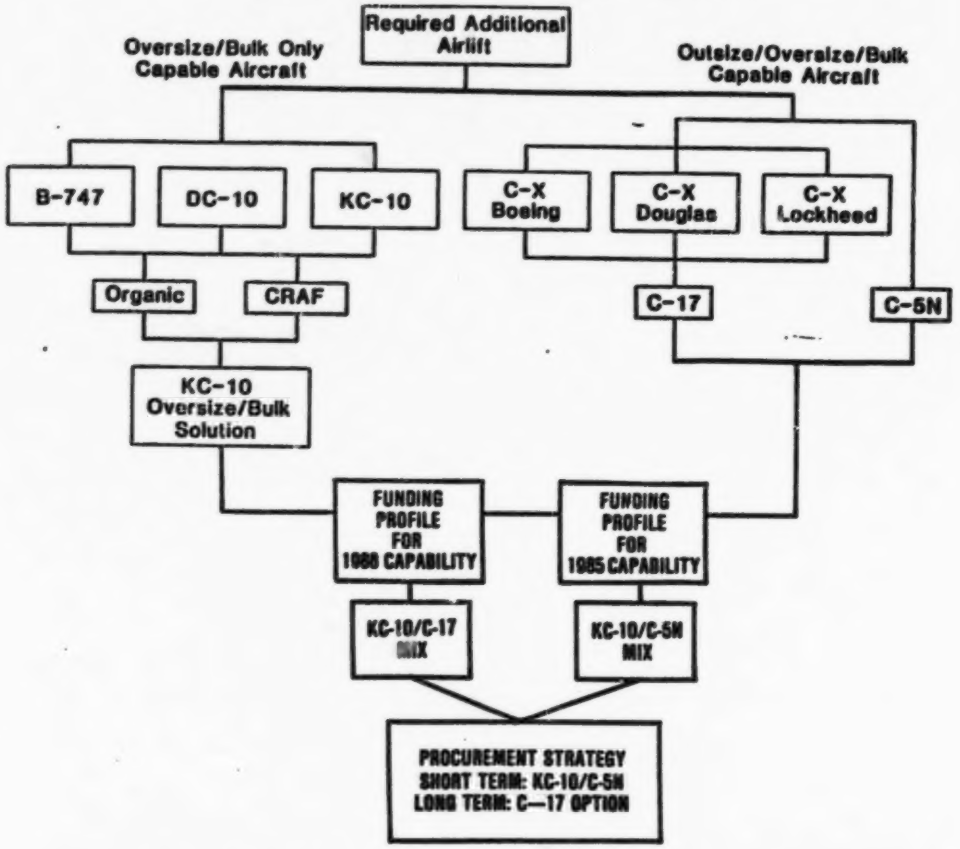
The Air Force RDT&E and procurement strategy will begin correcting the airlift shortfall. We have ongoing programs to improve the readiness, sustainability and capabilities of our current aircraft. Our programs include increasing spare part stocks and crew ratios to permit higher utilization rates of our C-5 and C-141 aircraft. We have programed a wing rehabilitation for our C-130A aircraft to extend service from the mid-1980s to the early 1990s, and also a wing modification program for the C-130B/Es to extend their service life well into the 21st Century.

The C-5A wing modification will provide a 30,000 hour wing, thus insuring its continued availability. The first aircraft entered the modification line in February 1982 and eight aircraft will be completed by the end of fiscal year 1983. Other modifications planned for the C-5A include an improve weather radar and a fuel saving advisory system.

The C-141 stretch program, which extends the fuselage and adds an air refueling receptacle, increases C-141 volume payloads by some 15-30 percent. This modification should be completed by June 1982. Fiscal year 1983 funds for the C-141 will continue needed improvements in several on-board systems such as station keeping equipment which provides the capability for brigade size airdrops in adverse weather. Even after completing the enhancements planned for the existing force, we still have serious shortfalls in our capability for intertheatre air movement of outsize, oversize, and bulk cargo.

We believe that procurement of additional C-5s and KC-10s is the best way to provide substantial near-term improvement to the U.S. defense mobility posture. Both aircraft are already in the Air Force inventory and their training and support elements are in place. The KC-10 is in production and the C-5 can be placed in production in a relatively short time.

AIRLIFT ACQUISITION PROGRAM DECISION TREE


Required Additional Airlift
Oversize/Bulk Only Capable Aircraft
Outsize/Oversize/Bulk Capable Aircraft
B-747
DC-10
KC-10
C-X Boeing
C-X Douglas
C-X Lockheed
Organic
CRAF
C-17
C-5N
KC-10 Oversize/Bulk Solution
FUNDING PROFILE FOR 1988 CAPABILITY
FUNDING PROFILE FOR 1985 CAPABILITY
KC-10/C-17 MIX
KC-10/C-5N MIX
PROCUREMENT STRATEGY
SHORT TERM: KC-10/C-5N
LONG TERM: C—17 OPTION

Before describing the C-5/KC-10 acquisition program, it might be useful to briefly summarize the decision process which led us to this plan. I am submitting for the record a "Decision Tree" which shows the progression of our consideration on how best to attack the problem of a very serious shortfall in airlift capability.

In the context of the Congressionally Mandated Mobility Study, including the presumption of maximum sealift and pre-positioning capability, there is a very sizeable unsatisfied inter-theatre airlift requirement. An inter-theatre capability is also required, but clearly the first priority is to move materiel into the theatre. Both aspects of the requirement were reflected in the C-X Mission Element Needs Statement (MENS), but it was made clear that any compromise would be in favor of inter-theatre capability.

As you will see from the decision tree, seven different aircraft were considered. Given the unexpectedly high cost of the CRAF options, and the limited capability of the models of the DC-10 aircraft (DC-10-10s) which were offered, and given that the KC-10 provides both a tanker and a cargo capability, the KC-10 was the obvious choice to enhance our capability to carry oversize and bulk cargo.

The C-17 vs C-5N decision, however, was very dependent on the amount of resources available for airlift procurements in the near term. Initially, in fact until just a few weeks before the President's Budget went to the printers, available funding pointed to a stretched out procurement with a meaningfully enhanced operational capability closer to 1990 than to 1985. Such procurement profile gave neither a delivery date nor a risk avoidance advantage to either aircraft—and, the Air Force decision was to go with the C-17 because it provides a broader range of capability in a hybrid inter-/intra-theatre airplane. When it became obvious that $2 billion could be made available in fiscal year 1982/83 and $3.6 billion in fiscal year 1984/85 for airlift procurement, the C-5N then became the obvious choice. The C-17 program could not be significantly accelerated, whereas the C-5N could—the net result being that, by procuring the C-5N, we begin to address the outsize shortfall about three years sooner. Specifically, the first production C-5N can be made available two years earlier than the C-17 and provide an immediate operational capability. Because the C-17 is a totally new aircraft, meaningful additional capability would not be available until delivery of the twelfth airplane (six to a training squadron and six to constitute an operational squadron) almost a year later.

Hence, the overriding consideration in the choice between the C-5 and C-17 is the conclusion—documented in CMMS and numerous other studies over many years—that a significant airlift shortfall exists *now!* Consequently, the objective is to increase airlift capability as quickly as possible.

The air-refuelable C-5 has intercontinental range and can carry all the major firepower and equipment items of our modernized ground forces. It is our only aircraft presently capable of transporting outsize cargo. Our in-service fleet of 77 aircraft is totally inadequate to meet our outsize cargo needs. We plan to increase the C-5 force to 127 aircraft by procuring 50 C-5Bs through fiscal year 1987. The C-5B will be the C-5A design updated with all currently approved engineering change proposals—a 30,000 hour service life wing, modernized TF39-1C engines, improved avionics, and more durable and corrosion-resistant aluminum alloys.

By acquiring C-5Bs we will be able to begin promptly to correct the serious shortfall in our airlift capability and to improve our ability to transport large volume and weight cargo over intercontinental distances. Acquisition of C-5Bs will enhance our ability to reinforce Europe in the early hours and days of conflict and our ability to rapidly project combat forces worldwide. With no research and development required and an existing production base, we will be able to begin to field C-5Bs by the middle of this decade, well before a new production aircraft would be available. For example, by the end of fiscal year 1987 we will have delivered 17 more C-5s than we could have delivered C-17s with total program concurrency, and will have 3.8 MTM/D more capability. The early availability of the C-5 over the C-17 (two years with considerable concurrency, three years by conservative estimates) is made possible by the existence of government-owned tooling and engineering drawings valued at more than $750 million and, for many C-5 items, qualified sources of supply. The C-17, on the other hand, represents a new development with attendant research and development, production, initial training, and operational costs and risks.

Under most scenarios, the outsize portion of the airlift requirement is typically on the order of 35–40 percent of total airlift capability. This percentage may vary based on actual flow patterns of the aircraft, as well as the extent to which oversize or bulk cargo must be intermixed with outsize cargo, but has been demonstrated to represent a fairly constant ratio to total airlift requirements. The availability of adequate outsize airlifters is critical in most NATO and Southwest Asia deployment scenarios.

The KC-10, procured in open competition with the B-747 as the Advanced Tanker Cargo Aircraft (ATCA), provides the unique capability to be used as a tanker, as a purely cargo aircraft, or in a dual role. As a tanker, the KC-10 can extend, through aerial refueling, the range and payload of the C-141 and C-5 transport aircraft. It is anticipated the KC-10 will be used predominantly in a dual role. Early in a mobilization, it will deploy tactical fighter squadrons by carrying personnel, equipment and simultaneously refueling the deploying aircraft. At other times, it will carry both cargo and fuel. After rendezvous with a receiver cargo aircraft, it will proceed to a separate inter-theatre destination.

Since there is an existing KC-10 production line and the Air Force already has a favorable cost contract with McDonnell Douglas, this acquisition will be both highly responsive and economical.

The Air Force had also considered increasing airlift capability by modifying existing passenger aircraft, owned by the airlines, to include cargo features through the enhanced CRAF program. Under this program the Air Force would pay the cost to modify civil passenger aircraft so that they can be converted rapidly to carry oversize and bulk cargo in lieu of passengers. Also, the civil carriers could be paid the increased operating costs for operating the converted aircraft as well as lost revenues for operational downtime during the actual aircraft modification. Viable offers were received from three carriers for 49 DC-10-10s, and 4 DC-10-30s. This option was rejected for several reasons. The most notable was the projected cost was much higher than expected. In addition, the majority of the aircraft offered were the DC-10-10 models which are very range limited, requiring two ground refuelings to reach most potential crisis destinations. The Air Force is not, however, foreclosing the possibility of enhanced CRAF modifications, particularly for new production wide-bodied, long range aircraft, or to retrofit aircraft if more favorable offers are proposed. Funds are tentatively budgeted in fiscal year 1984 and beyond for this purpose.

With respect to the longer term (procurement beginning in 1988 for delivery in 1990, and beyond), actions will be required not only to continue to reduce the airlift shortfall, both intra- and inter-theatre, but also to replace existing C-130 and C-141 aircraft as they reach the end of their service life. To achieve the long term Defense Guidance goal of nearly simultaneous operations to Southwest Asia and NATO would require considerably more airlift capability over the near-term CMMS increment described herein. Since our planned program builds capability about as rapidly as possible for the next several years, we will continue to refine our long-term needs and options.

The Military Services and the Joint Chiefs of Staff (JCS) recommend a modestly paced R&D program for the C-17 to refine further the advanced technologies suitable for the long term solution. Subject to congressional approval, a fiscal year 1982/83 C-17 R&D effort will be funded from the unobligated fiscal year 1981 C-X appropriation. (These funds must be obligated by the end of fiscal year 1982.) The effort will focus on technical advances applicable to the C-17 but also beneficial to other airlift programs. Specific areas to be investigated include low speed powered lift, engine core thrust reversing, winglet configurations, and cruise drag estimates. Another possible area of investigation is use of advanced structural materials.

This effort will preserve the option to begin production of a C-17 flight test production vehicle in fiscal year 1984. The C-17 program would provide a competitive alternative to the in production C-5B for inter-theatre airlift requirements and a realistic option for satisfying intra-theatre outsize airlift requirements. Certainly, the C-17 will be a viable candidate as a potential replacement for C-141s and some C-130s in the 1990s and beyond. In addition, the C-17 will also be considered as a common airframe for other unrelated missions such as worldwide airborne command and control and use as a Marine Corps tanker.

Other key mobility programs include Operational Support Airlift and Combat Helicopter Modernization. Operational Support Airlift is part of a new initiative—the European Distribution System (EDS). The purpose of EDS is to provide assured wartime distribution of critical spares and aircraft engines in the European theatre to enhance readiness and sustainability.

The EDS program consists of three elements: logistics C^3, forward stockage of spares in Europe, and assured air transportation of critical spares and aircraft engines. Our procurement program supports this last element and includes plans for 18 small, off-the-shelf commercial cargo aircraft. Our fiscal year 1983 request procures the first two EDS aircraft. It also includes a limited amount of RDT&E for development of the logistics C^3 element and a modified skid system to transport fighter aircraft engines on the class of cargo aircraft being procured.

The Combat Helicopter Modernization program addresses the urgent need to modernize the Combat Rescue and Special Operations Forces to cope with increasing threats and to overcome severe maintenance problems resulting from obsolescent equipment. We are developing a derivative of the Army UH-60 Black Hawk—a helicopter of proven reliability, maintainability, and survivability. Using the basic H-60, we are integrating improved avionics for precision low-level navigation at night and in adverse weather, adding auxiliary fuel tanks, and an air refueling capability, and installing other necessary Air Force mission equipment. We will begin procuring this helicopter, which is designated the HH-60D, in fiscal year 1984.

The Joint Services Vertical Lift Aircraft (JVX), a multi-mission aircraft for the Army, Air Force, Navy, and Marine Corps is currently under development. A Joint Services Operational Requirement (JSOR) will be completed in late 1982 followed by a Request for Proposal (RFP). This weapon system may be ideally suited to replace the Air Force's combat rescue and special operations forces in the 1990s and possibly expand to other mission areas as development matures.

In summary, our airlift program, as outlined in the President's Fiscal Year 1983 Budget, will enable us to commence promptly to correct the serious shortfall in our airlift capability and to improve our ability to transport a large volume and weight cargo over inter-continental distances. Acquisition of additional C-5s and KC-10s will enhance our ability to reinforce Europe in the early hours and days of conflict and our ability to project rapidly combat forces worldwide. Our fiscal year 1985 budget submit will contain a coherent longer term program for satisfying our airlift needs into the 21st Century.

Senator COHEN. That is the reason why I asked you the question. If in fact those levels are not there in fiscal year 1982-1983 or fiscal year 1984-85, what happens? You said 5 or 10 percent, that you can still live with that, and this would still be your choice.

Mr. **Mosemann**. That is strictly off the top of my head, but obviously, we would need enough up-front money to get the line open and to get some significant quantity of production started. The closer that the C-5B production would slip towards 1990, obviously then it loses its advantage.

C-5B VERSUS C-17

Senator **Cohen**. Now, coming to your conclusion concerning C-5B versus C-17. McDonnell Douglas has in fact furnished you—as well as the committee—with data that would indicate that they could make an accelerated availability, given the same amount of funding for the C-17 as the C-5B.

You stated quite categorically that that simply is unfounded, or you say they are overly optimistic, a better way of phrasing it. But overly optimistic by as much as three years, is that correct?

Mr. **Mosemann**. Yes, I think what I would like to do is provide two charts for the record. The first is a plot. McDonnell Douglas made a proposal to us which, if taken literally, just was not practical. By that I mean, they took all the money that we have in the budget for the C-5 and assumed that all that money could be given to them to buy the C-17.

Now, all that money that is in the budget for the C-5 does not go to Lockheed, some of it is military construction funds; some of it is support equipment funds; some of it has to do with various other support functions. So, that proposal from McDonnell Douglas would not be feasible for that obvious reason.

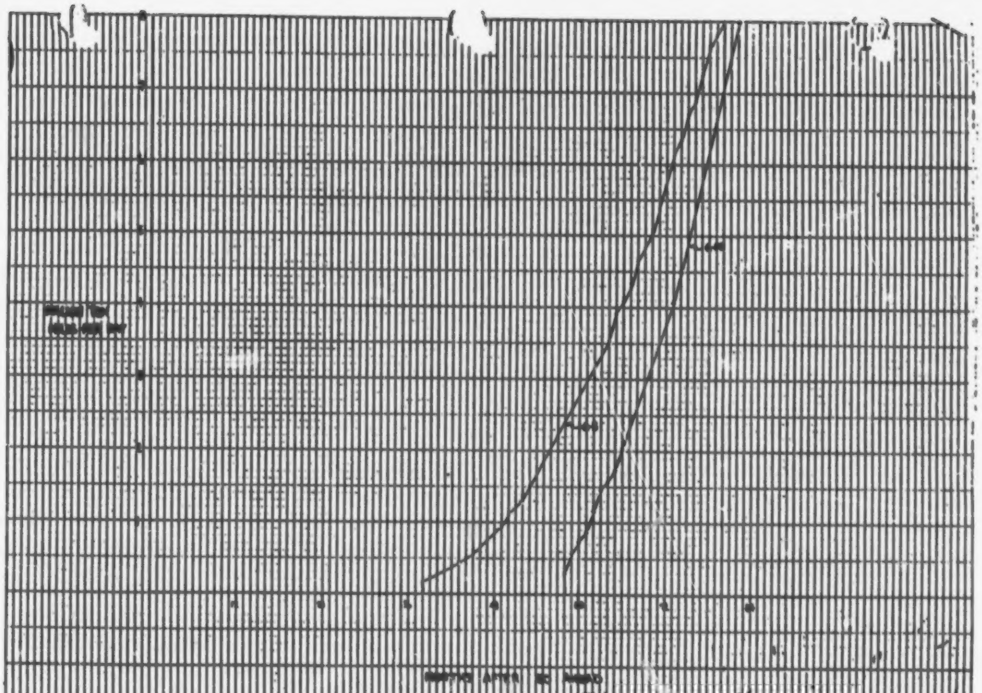
But if you took all the money that we would, say, give to Lockheed under a Lockheed C-5 contract in this timeframe and make that same amount of money available to McDonnell Douglas, there would be an accelerated schedule. That is one of the charts that I will provide you for the record.

From that chart you would note that the first article delivery is still 20 months later than for the C-5B.

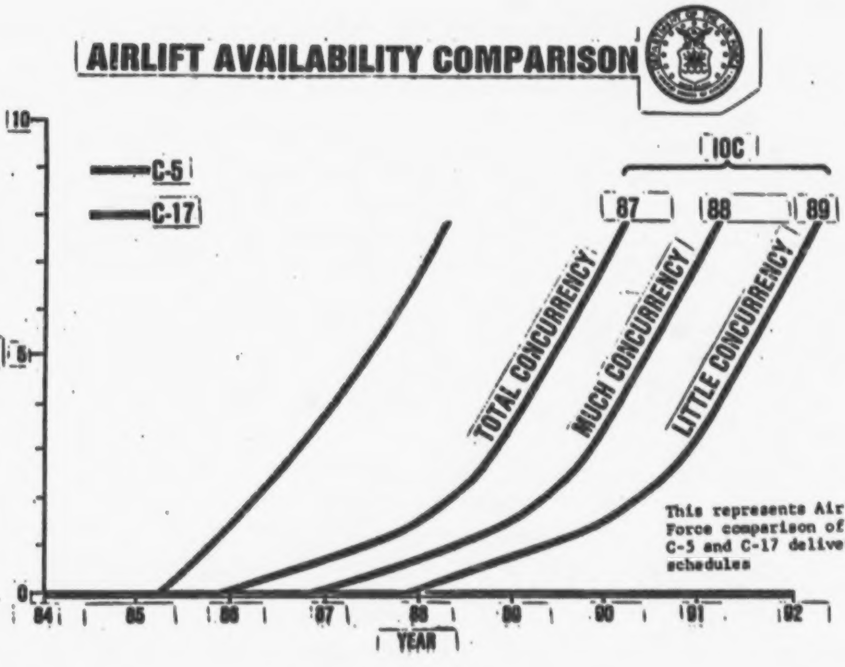
The curve that I referred to earlier, that it was not practical because there are not those kinds of funds available, would have shown an 11-month difference.

Now, I have a second chart that I would provide for the record, and this chart essentially postulates three IOC dates—initial operational capability dates—for the C-17, one in 1987 with almost total concurrency; one in 1988 with much concurrency, and one in 1989 with little concurrency.

When you compare any one of three curves against the C-5B availability curve, you have the very significant benefit of the 3.8 million ton-miles a day advantage that we were talking about. I think those charts—I will provide them for the record here—will help you.



This graph represents McDonnell-Douglas proposal if funds earmarked for Lockheed to procure C-5s were made available instead to McDonnell-Douglas to procure C-17s



This represents Air Force comparison of C-5 and C-17 delivery schedules

ATTACHMENT D

C-X

Senator COHEN. Some of the funding for the R. & D. program for the C-X that is left over, I think it is some $32 million that has not been spent to this time, and you touched upon this in your statement. Dr. Keel's statement referred to low speed-powered lift, engine core thrust reversing, winglet configuration, cruise drag estimates, and the use of advanced structural materials.

The question I have is, have all these items been envisioned in the original C-X or C-17 program?

Mr. **Mosemann**. Yes, one of the things that we did as a part of our evaluation of the C-17 program was to ask NASA—the National Aeronautics and Space Administration—to review the proposal from an engineering-risk point of view.

NASA offered us the opinion that, while the overall C-17 technical risk was no greater than a typical commercial airliner development, that they—that is NASA—did have some concern with the proposed design approach for engine reverse and with the blown flap high-lift performance on a swept-wing airplane in high angles of attack and low air speed regimes.

The purpose of the initial C-17 design test, therefore, will be to reduce the risk in these specific areas prior to committing to any kind of a full-scale development effort.

Assuming the reprograming authority that we have asked for, the about $32 million in 1981 C-X funds, we would spend 2 years of effort in preliminary design to address these risks; and, then, again assuming that this is what we come down on in our ultimate program, we would come to you later for additional funds. There would likely be more years to finalize the design, construct a preproduction test aircraft, and to conduct a comprehensive test program.

I guess that answers your question.

Senator Cohen. Who is going to do the R. & D. work?

Mr. **Mosemann**. It would be done by McDonnell Douglas under contract with the Air Force.

I think that sometimes in the discussions, if I may just offer a gratuitous comment, people have already forgotten that the C-17 was the result of a competitive procurement effort. It was the best of the alternatives offered under that particular proposal.

Senator **Cohen**. Well, let me explain my frustration. Last year, I was one of several who were very concerned about the request for some $250 million for R. & D. money, and a lot of us started raising questions.

I recall ending up in the Armed Forces Journal International with a barb instead of a laurel, as somehow endangering national security because these questions were being asked during the meetings last year. I received a considerable amount of mail as a result of that.

So, I am just wondering now whether or not deferral or delay or opposition—because we had so many questions—was not in the overall national security interest. Many more questions remain to be answered. We would like to do it the right way and take our time and build a prototype which will be low risk in terms of cost overruns and success in putting together an aircraft.

That is why I am asking you these questions.

Mr. **Mosemann**. Yes, sir.

Senator **Cohen**. I assume that you would agree with that.

Mr. **Mosemann**. I would agree that 2 more years of development will not hurt.

Senator COHEN. Senator Nunn?

Senator NUNN. Thank you, Mr. Chairman.

C-5B

General Allen, what are the principal reasons that the C-5B has been selected for this role that you described?

General ALLEN. The principal reasons, Senator Nunn, are one, the C-5B is the only airplane that has a reasonably early availability which will augment our outsized airlift capability. We desperately need to augment that capability just as fast as we possibly can.

Senator NUNN. Is the early availability and the ability to carry outsized loads the two principal reasons?

General ALLEN. Yes, sir.

Senator NUNN. If you were looking simply for the number of pounds of cargo you could carry for the cheapest price, that would not drive the same decision, would it?

General ALLEN. Let me rephrase that. That is not the problem that we have today. We have fairly good capability of carrying bulk cargo, and bulk cargo can be carried by a lot of airplanes, including such airplanes in the CRAF as DC-8's for example, and they do a commendable job in carrying bulk cargo. The 141's of course, can carry bulk cargo.

We have no shortage of passenger-carrying capability, the CRAF satisfies our requirements there.

We have a major shortfall in our ability to carry outsized equipment, and outsized equipment that is part of the organic Army, Marine Corps, what have you, equipage without which they just cannot fight—things like 8-inch and 155mm, self-propelled guns, for example. You cannot expect the Army to go to war without their artillery with them.

Senator NUNN. What can the C-5 carry in that respect?

General ALLEN. Tanks, infantry-fighting vehicles could be carried by the 747 if you take them apart to some degree. The same thing with cargo carriers; the same thing with attack helicopters, field artillery, the 8-inch and 155 mm self-propelled. The Army's air defense weapon system; utility helicopters, Army recovery vehicles, Army command-post carriers, semi-trailers, bridging equipment, 5- and 10-ton trucks, their wreckers, their forklifts, all the wherewithal with which they go to war and provide firepower.

Senator NUNN. Are you saying those can only be carried on the C-5, or are you saying they can only be carried in sufficient numbers? What are you precisely saying?

General ALLEN. They can only be carried on a C-5 without major disassembly.

Senator NUNN. Why would you not just disassemble them?

General ALLEN. It would add tremendous time in loading and tremendous time in unloading and getting them ready to fight again.

Senator NUNN. So, it is the time requirement.

General ALLEN. That is exactly right, which is the advantage that is provided by airlift over sealift.

Senator **Nunn**. Do you have any kind of studies showing this outsized requirement?

General **Allen**. Yes, sir. As a matter of fact, I can give you some figures right now. In today's infantry division, current infantry division, their outsized requirement is 26 percent of their equipment. If they are a modernized infantry division, the way they are going, that grows to 33 percent.

Today's mechanized division, the outsized requirement is 41 percent and they are going to 55 percent.

Senator **Nunn**. Could you give us for the record the studies, the names of the studies and a brief summary of the studies that have dealt with this outsized requirement? I understand you have had several over a period of years.

General **Allen**. I will be happy to, sir.

Senator **Nunn**. Mr. Mosemann, is it the Air Force's position that the C-5B will be less expensive to procure than the C-17 for an equal capability fleet of both aircraft; is that the driving force, or is it mainly the time factor?

Mr. **Mosemann**. It is primarily the time involved, although it is also true that in terms of the amount of capability that we would get with the 50 C-5Bs that we are proposing to buy, and that is 8.2 million ton-miles per day, we can buy in terms of the 20-year program cost for the C-5B this 8.2 million ton-miles per day at $14.1 billion.

To buy the same capability with the C-17 would cost us over the 20-year period $17 billion. That, of course, is because of the large research and development effort that still exists on the C-17.

Senator **Nunn**. Do you have any charts that show each one of these candidates, the 747, the C-5B, the C-17, and the DC-10? Do you have any charts that show them in terms of costs, in terms of outsized capability; in terms of availability, delivery date, those kinds of things?

Mr. **Mosemann**. Yes, we do.

General **Allen**. I am sure we could prepare such charts.

[The information follows:]

747, C-5, C-17, DC-10 Cost Comparison Charts

The following chart was presented to the Senate Armed Services Committee by Secretary Weinberger as a supplement to his hearing on 2 February 1982 and provides a comparison of the aircraft data which you requested. It should be noted that the B747 data are subject to change after completion of the Air Force evaluation of the Boeing 17 March 1982 proposal.

	KC-10	C-5	C-17	B747	
Proposed Program ($ aircraft) (Buy)	44	50	64	40	32
(PAA)	39	44	57	35	28
Million Ton Miles Per Day* Per Aircraft	.125**	.186	.145	.234	.292
Million Ton Miles Per Day* Added by Program	4.9**	8.2	8.2	8.2	8.2
Weight of Cargo Load (Tons) (Normal/Max)	60/85	75/120	45/86	88/125	
Cargo Compartment Size (W/H in ft)	20/8	19/13	18/12	19/8	
Daily Utilization Surge Rate (Hrs/Day)	10#	12.5	15.6	12.5	15.6
Unit Acquisition Cost	$52M	$118M	$112M	$70M	$70M
Acquisition Prog*** Cost	$2.4B	$6.1B	$10.3B	3.0B	2.4B
20 Yr Opers & Support Cost	$2.6B	$8.0B	$ 6.7B	6.8B	5.6B
Prog 20 Yr Opers & Spt Cost	5.0B	14.1B	17.0B	9.8B	8.0B
First Delivery (FY Qtr/Yr)	FY3/84	FY3/85	FY4/87	FY1/84	FY1/84
Last Delivery (FY Qtr/Yr)	FY2/89	FY3/89	FY4/91	FY1/88	FY3/87
Initial Oper Capability	As Recd	As Recd	FY4/88	FY1/85	

FOOTNOTES:

* Ton miles per day computations are from major airfield to major airfield and do not take into consideration cargo throughput capacity to small intra-theatre airfields.

** Assumes cargo use only; does not consider multiplier effect of cargo/tanker role in deploying tactical air squadrons, or for refueling other airlift aircraft. Assume 10 hours per day rate; proportionately higher at 15 hours per day rate.#

*** Acquisition program cost includes initial spares, technical data, RDT&E, and MILCON (RDT&E and MILCON are excluded under unit acquisition cost).

# Ten hours per day surge rate for KC-10 reflects existing posture as constrained by crew ratio authorizations under current planning; surge to 15 hours is logistically supportable.

NOTE: 1. Source of data is Supplement to Secretary Weinberger's testimony to the SASC, 2 Feb 82.

2. B747 data subject to change based on Boeing 17 Mar 82 proposal.

Senator **Nunn**. You have the basic information.

General **Allen**. Yes, I think it is important to recognize also that there are other features that were mentioned earlier about the C-17 that would not necessarily show up in such charts, the capability for air drop, for low-altitude extraction procedures; the capability for direct delivery to airfields in proximity to the troops that need the equipment, as opposed to a main operating base from which it has to be moved forward to the fighting area.

Senator **Nunn**. So, the C-17 would have certain capabilities that would not be comparable to any other plane, is that what you are saying?

General **Allen**. That is correct.

Senator **Nunn**. Is the outsized capability of the C-5 in a unique category? Is it comparable to any other plane?

General **Allen**. That is certainly true—that is certainly true. The C-5 is the only airplane that we have today which you can roll on and roll off this outsized equipment which the ground forces require.

Senator **Nunn**. General Allen, how do you rate this outsize requirement, is this something that ought to be the driving force, or should it be just a factor? In other words, when you balance these things and different planes have different characteristics and different advantages and disadvantages, how do you go about, analytically, deciding which of these unique features is going to be the dominant force in the decisionmaking?

General **Allen**. Well, I think clearly the equipment with which our ground forces are equipped today, the equipment which they depend upon, is really not my province. But the fact of the matter is, a great deal of their equipment is outsized equipment.

Our job as a supporting command—and we are a supporting command—is to move the forces that need to be moved just as quickly as we can move them to wherever it is they need to go. That includes moving them with their equipment.

This is the equipment which they have, our job is to move it. Today we have serious shortfalls in our ability to move that equipment. So, the outsized requirement is indeed a driving factor in any formula for solution of the shortfalls that presently exist.

Senator **Nunn**. What is the 747 capability with outsized loads?

General **Allen**. It has no capability with outsized other than with a certain amount of disassembly and with great difficulties in loading and unloading. The high deck of the 747 means that you have to raise that equipment up to the level of that deck and maneuver it through the door and stow it in the cargo compartment. In some cases it can be done but with great difficulty; in other cases, depending upon the equipment you are talking about, it will not go in at all.

Senator **Nunn**. Do you have a cost comparison between the 747 and C-5B?

Mr. **Mosemann**. Yes, I am sure we have.

General **Allen**. What is your question?

Senator **Nunn**. How do you compare the costs? How do you arrive at an analytical comparison of the costs for the C-5B or the 747?

Mr. Mosemann. The C-5B program that we have postulated, the 50 airplanes, as I mentioned, 8.2 million ton-miles per day. If you use that as your common demoninator and, say, now buy an equivalent number of 747's that deliver 8.2 million ton-miles per day.

The program acquisition cost in fiscal year 1981 dollars of the C-5B amounts to about $6.1 billion; for the 747—48 aircraft—it would amount to about $3.6 billion. The 20-year program cost, which is with both acquisition and operation and support cost, shows a $14 billion number for the C-5B and about $10 billion for the 747.

But again, as the General has mentioned and as I have mentioned in my opening statement, the 747, while it is somewhat cheaper—one might even say significantly cheaper—does not provide the capability that we need.

It has even been proposed, for example, that the 747 could be modified to lower the nose, and we have looked at that. That causes us some concern because of the angle of tilt and the difficulty and the hazard of loading in such a situation.

So, we have come to the conclusion that it is not an alternative.

Senator Nunn. The 747 would be less expensive than the C-5B, but would not perform the mission that you think is the top requirement, which is the outsized load?

Mr. Mosemann. Affirmative.

General Allen. That is correct.

Senator Nunn. Mr. Chairman, I have a good many questions I would like to ask for the record, a rather detailed analysis for all the programs.

Senator Cohen. I just have a couple more.

I know that the congressionally mandated mobility study recommended 10 million ton-miles of outsize lift. My question is: Is this 10 million figure based directly upon the CMMS analysis itself? Where did you get that figure?

Mr. Mosemann. It comes out of the CMMS analysis.

Senator Cohen. It comes out of the analysis?

Mr. Mosemann. Yes. sir.

ALLIED COOPERATIVE AIRLIFT AGREEMENTS

Senator Cohen. General Allen, a question regarding Allied Cooperative Airlift Agreements. The administration has been making a request for some legislative action this year. What would that include? I guess I have several questions: What kind of budgetary impact would it have, and why do we need it?

General Allen. Let me answer the last part first, if I might. there is no budgetary impact whatsoever. It is absolutely a no-cost program.

It is in many respects analogous to the NATO Mutual Support Act which the Congress passed in 1980, which I had the opportunity to testify in support of prior to its passage.

What it amounts to is that in places like Europe, in New Zealand and Australia they have airplanes flying around; we also have airplanes flying around doing things that are required to be done. From time to time there is an opportunity for us to save a flight by putting, for example, a bag of mail on their airplane or a couple of people on their airplane and avoid sending an airplane ourselves and vice versa.

This is small numbers of people, small amounts of cargo that allows us to work together as allies. It enhances cooperation. It enhances cooperability and interoperability, and it is at no cost to anyone.

Senator **Cohen**. Could it possibly extend to the Persian Gulf area?

General **Allen**. I do not envision that in the immediate future; no, sir.

Senator **Cohen**. I am going to leave the record open until the close of business on Monday to allow Senator Jackson to formulate some more questions for you.

General Bowden, you have been waiting patiently, and I am happy to ask you to proceed at this time.

STATEMENT OF BRIG. GEN. WILLIAM P. BOWDEN, DEPUTY DIRECTOR, LOGISTICS PLANS AND PROGRAMS, USAF

General **Bowden**. Sir, If I may I would like to give you a short presentation on the other procurement program of the Air Force, and I might say, sir, that what we are addressing today are two aspects of the Air Force other procurement program.

Other Procurement Air Force (OPAF)

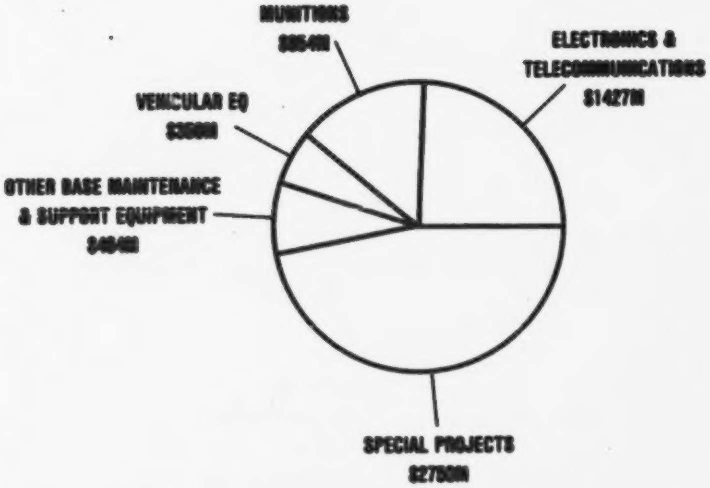
FISCAL YEAR 1983 FORCE PROJECTION

There are four major accounts in what we call the 3080 account, the Air Force other systems procurement. One is munitions, another is electronics and telecommunications, another is vehicles, and then finally, the other base maintenance and support equipment.

The other base maintenance and support equipment is the piece of the action that I would like to discuss with you.

FY 83 PROCUREMENT APPROPRIATION

$5,845 MILLION



This summarizes, as I just mentioned, sir, the kinds of dollars that are in here for the other procurement program. We are talking in fiscal year 1983 of about $5.8 billion, spread out into the account as shown, about $1.4 billion for the electronics and telecommunications. In this area we are talking about the antennas, radar equipment for the early warning-type strategic space equipment; we are also talking about the radios and the data links that go with the forward air controllers that are in the battlefield area, a wide variety of this kind of equipment.

In the munitions area, this covers our WRM, (War Reserve Material) and our training munitions. We are in a transition period now of modernizing our munitions inventory, moving from the older bombs to the precision-guided munitions and some of our newer cluster munitions.

In the vehicle account there are $350 million. This is a long-neglected account that we have had in the Air Force. We keep vehicles longer than we should be keeping them. We are short of some, and now have undertaken a very serious effort to modernize our vehicle fleet. Over the next 5 to 6 years we will be at a point where we can have a methodical replacement program.

A portion of the other base maintenance support equipment is what we will be talking today about. Some of the items that are in this program are precision-measuring equipment that we have at each place, the kinds of equipment that we need to do the right kind of maintenance.

Then, in the 3080, other procurement, there are some special projects totaling about $2.7 million. They are in the classified arena.

Now, I would like to talk about the subject at hand today, which is our bare equipment. When I finish talking about it, I will talk a little bit about the NATO pre-positioning equipment that you asked me to address.

The bare base system, this is really the readiness force projection issue.

OPAF FORCE PROJECTION

BARE BASE SYSTEM

Provides force projection sustainability.

Mobile facility and utility packages: aircraft hangars/shops, billeting, messing, latrine, electric power, water treatment, storage and distribution.

We are talking about facilities that do two things: Facilities to maintain an aircraft and its equipment, and we are talking about facilities that take care of our people, places for them to work; places for them to sleep, eat, take care of the sanitation and so forth. A very important part of our programs.

What I am talking about in the bare-base system, we defined that for years—our bare-base system—as a place that has a runway, taxiway, parking aprons and a source of water.

Now, with the Southwest Asia initiatives that we are undertaking, we are having to work very hard. I am sure that we have the right kind of equipment for the water that our people need.

This is how we arrange the bare-base system, around the parking area. [Chart deleted.] This picture comes from Bright Star 1981. We just completed Bright Star 1982.

These are the modular design maintenance facilities, and we have some general purpose shelters. We would also put up a couple of hangars that I will show you a picture of, to do our aircraft maintenance.

Out in here we will have a dining hall area, hospital area, and the living accommodations for people. This is a self-contained operation. We put generators out there and have water-drilling equipment and so forth to get the job done.

This is the kind of equipment that we intend to put out there. This is the hangar, [chart deleted] it is about 130 feet long, about 75 feet across, about 25 feet high. There is a door on it that we can shut to keep out the dust and weather. We can enclose a couple of airplanes in there while we are working on them at night for survivability purposes.

It is made of lightweight metal and comes in 8 foot sections. You pack the whole hangar in four containers. The containers later turn into entry ways or we use them to store equipment. This hangar can be put up by about 12 people in 5 long day's effort. It is highly mobile and it fits into a C–5, a C–141, or a C–130.

Another kind of a shelter is what we call our expandable shelter. [Chart deleted.] It expands from its packaged configuration and it is the kind of shelter that we can do our maintenance on our bombing navigation equipment in, our radios and so forth. We can use these shelters for a wide variety of purposes.

Senator **COHEN**. When you construct, or contemplate constructing these facilities, are you taking into account the factors of Bright Star 1981 and 1982? It is going to be a lot hotter.

General **BOWDEN**. Yes, sir. All of the lessons learned. That is one of the purposes of these exercises, to see what kind of environmental control systems we need, air-conditioning. What kind of cooking utensils and this sort of thing that we need. It is very helpful.

Senator **COHEN**. One of the criticisms to date from those who were in the Arab countries was that it was in early spring, that you have not been there in the summertime. It gets to be about 120 degrees and the humidity is pretty high; not to mention the amount of water your men consume, which is about five times that of the Arab personnel. It is going to be considerably hotter there in summer.

General **BOWDEN**. Yes, sir. Cooling systems are one of the highest priorities that we have in our program, and we are making some good efforts.

Now, this is a 5-year, 6-year buy-out program and we phase those things each year. So, we are slowly getting there. We are not going to have all those air-conditioners and so forth right away, but we have a handle on it and our management program will get us there.

This is a general purpose shelter. [Chart deleted.] We can use this for a number of things, our supply depot; or we can use it for dining halls and so forth. To form a kitchen dining area we put them together in a modular fashion like this. [Chart deleted.] We put a couple of those shelters together. This is the cooking and the serving area.

This is the new living tent where we are making a cooperative effort with the Army's DOD program to improve the tents. [Chart deleted.]

These also come in modular sizes. [Chart deleted.] We can put a number of them together, to build a dining hall, hospital. You can see how we have put these modules together. it is a very durable type of material and I think we will be served well by this equipment.

OPAF FORCE PROJECTION

BARE BASE SYSTEM

Existing inventory sized to Europe/Korea requirements, 8 squadrons of aircraft maintenance, 14 squadrons of people support.

Southwest Asia requirement: 28 squadrons of aircraft/people support.

We are not very far along in our bare base program. This chart shows you that over the years we have been working, building up our bare base programs to support operations in Europe and Korea, that on the average we have enough to support about 8 squadrons—I am talking about 24 F–16's or F–15's in squadron size. About 14 squadrons worth of people support.

The Southwest Asia requirement of the OSD guidance directs us to build toward this kind of number, 28 squadrons on the average for aircraft and people. So, we have a long way to go. That is the program I told you we are phasing in over the 5-year plan.

OPAF FORCE PROJECTION

BARE BASE SYSTEM

Proven capability: tested state of the art, DOD standard family.

Fiscal year 1982 budget amendment $110 M.

Fiscal year 1983 budget request $85 M.

Multi-year/competitive.
Provides 30 percent of requirement.

This is the amount of dollars that we put in the program. In fiscal year 1982 we got a good start, $110 million; $85 million in fiscal year 1983. The program is multiyear. It is competitive type and many contractors are interested in putting together this kind of equipment. They are willing to give us fixed prices on it. We are evaluating this very carefully.

This is where we stand right now, the bottom line, 30 percent of the requirement for bare base equipment.

Just to shift gears on you very quickly. As you well know, sir, there are many parts of the pre-positioning program in Europe.

OPAF Force Projection

EUROPEAN PRE-POSITIONING

OSD initiative.
Pre-position common support equipment: generators, floodlights, air compressor, servicing carts, mobile refueling equip, fuel bladders, portable storage bldg.
Fiscal year 1982 budget amendment $14 M.
Fiscal year 1983 budget request $12 M.

We are talking about fuel storage; we are talking about munitions and munitions storage itself, aircraft type support equipment, and spare parts.

Another part of the 3080 account are the kinds of equipment that we need to put in the European theater to be able to generate sorties in a hurry. We are talking about ways to refuel airplanes, ways to start them; ways to put hydraulic fluid in, and so forth. We have a program to get that job done.

This is an example of the flight line equipment that we are buying and pre-positioning at the rate of $12 to $14 million a year. We just about have our program bought out in this account.

This is a refueling mechanism called R-14. [Chart deleted.] Two 50-gallon bladders come off of the top of the R-14 and are put on the ground and can be filled up with fuel.

Then this arrangement right here refuels two tactical fighters at one time. The rate is very good for fast turn-around, and this is the kind of equipment that we will be putting in the bases that do not have the refueling capability for our airplanes.

We go through a very careful system in evaluating what kinds of facilities and equipment are at each of those bases, whether it is our Southwest Asia scenario, a bare base, or whether it is the NATO pre-positioning program, assess what we need and buy against that requirement.

That completes the program I wanted to show you, sir.

Senator **Cohen**. General, thank you very much.

I appreciate all of you coming this afternoon. It is such a great day. Senator Nunn was reminding me, it is one of the few times that he enjoys being in the minority, at 3:30 in the afternoon on a Friday. [Laughter.]

I appreciate your testimony today.

General **Allen**. Thank you, Mr. Chairman.

[Questions with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR HARRY F. BYRD, JR.

CONGRESSIONALLY MANDATED MOBILITY STUDY (CMMS)

Senator **BYRD**. General Allen, the Congressionally Mandated Mobility Study (CMMS) recommnded the addition of 20 million ton-miles per day of airlift enhancement. In doing so, the CMMS noted:

"For most of these scenarios, the types of cargo required early are large but not dense. Iterations of various lift levels . . . indicated, in general, that an outsize carrier providing both outsize and oversize capability is more efficient than an oversize carrier."

Do you agree that the first increment of additional airlift capability added to our present fleet should be outsize?

General **ALLEN**. Numerous analyses have shown serious shortfalls in airlift of all categories of cargo. These analyses also indicate that additional airlift aircraft can effectively be employed to reduce force closure times whether they are outsize capable or only bulk/oversize capable. We need to begin reducing these shortfalls as soon as possible, and should therefore begin acquiring both types of aircraft immediately. I support the procurement of the KC-10 and C-5B and continuation of the C-17 development as the first increment of airlift. This will allow us to develop an integrated airlift force that will effectively perform into the 21st century and allow us to progress quickly to the minimum recommendation of the CMMS.

Senator **BYRD**. General Allen, page 10-14 of the CMMS also states that although an outsize carrier may be more expensive than an oversize carrier in life-cycle cost that the outsize carrier:

"Would appear to be more effective in terms of cost per unit of shortfall reduction."

Do you agree with this assessment of cost effectiveness of the outsize carrier?

General **ALLEN**. An outsize carrier can effectively carry all types of cargo so it provides the flexibility to avoid the costly restrictions that will occur if only an oversize carrier is procured. However, to be cost-effective, our total airlift force must be balanced between inter/intratheater outsize, bulk/oversize, and passenger aircraft operated by active/ARF forces and CRAF.

AD HOC COMMITTEE ON AIRLIFT ENHANCEMENT

Senator **BYRD**. Mr. Mosemann, what was the purpose of the Ad Hoc Committee on Airlift Enhancement?

Mr. **MOSEMANN**. The purpose of the Ad Hoc Committee was to document the various considerations which were the basis of the near-term Airlift Enhancement Program decided upon by the DOD Single Manager for Airlift (the Secretary of the Air Force) in consultation with the Secretary of Defense. Because the near-term program only became possible at the very end of the fiscal year 1983 budget preparation process, not all participants and affected organizations were equally aware of all the factors considered. It was the purpose of the Ad Hoc Committee to bring all of these considerations together into a single paper.

AF POSITION ON 10 MILLION TON-MILES PER DAY

Senator **BYRD**. Mr. Mosemann, in addressing the CMMS, the report of the Ad Hoc Committee stated:

"The CMMS recommended immediate action to add 20 million ton-miles per day of inter-theater airlift capability above the fiscal year 1986 baseline. Since the fiscal year 1986 baseline assumed approximately 5 million ton-miles per day of CRAF capability which does not yet exist, the actual deficit is approximately 25 million ton-miles per day, of which at least 10 million must be outsize capability."

Is it the position of the Department of the Air Force that 10 million ton-miles per day of any addition of airlift must be outsize?

Mr. **MOSEMANN**. The CMMS recommended an affordable, reasonable mix of mobility procurement to meet national force projection demands. Airlift recommendation was, as stated 20 million-ton-miles (MTM) per day of additional capability, at least half of which should be outsized capable (assumed 5 MTM that does not exist). The Air Force position is that an immediate requirement exists for a minimum of 10 MTM additional outsize airlift capability. In addition, long term acquisition of airlift should achieve a 50/50 balance between outsize and oversize/bulk capability.

C–5 VERSUS C–17

Senator **Byrd**. General Allen, what is your understanding of the reason the C–5 was chosen over the C–17? Was date of availability a big consideration?

General **Allen**. When OSD made available increased near-term funding, the C–5 could be delivered sooner. Since the C–5 would be available earlier and the C–5 offers some of the same military characteristics as the C–17, (e.g. outsize, drive-on/off and truck bed loading height), it was chosen as the partial, near-term solution to the airlift shortfall. This selection does not eliminate the need for the C–17 in the far term.

C–5 LESS EXPENSIVE THAN C–17

Senator **Byrd**. Mr. Mosemann, is it the Air Force position that the C–5B will be less expensive to procure than the C–17 for equal capability fleets of both aircraft?

Mr. **Mosemann**. Yes. Since the C–5B requires only startup cost while the C–17 requires development, C–5B acquisition costs will be over a billion dollars less expensive for the first 8 million ton miles per day of capability.

20-YEAR LIFE CYCLE COST

Senator **Byrd**. Mr. Mosemann, is it the Air Force position that the C–5B will be less than the C–17 in 20 year life-cycle cost for equal capability fleets?

Mr. **Mosemann**. For fleets with capability in the range of 8 to 10 million ton miles per day, the life cycle costs for C–5Bs or C–17s are approximately equal. The C–5B will be less costly to procure while the C–17 will be less costly to operate over the 20-year life cycle.

C–5 AND B–747F

Senator **Byrd**. Mr. Mosemann, you testified that the life-cycle costs for the C–5 and the Boeing 747F are $14.1 billion and $8.0 billion respectively. Do the costs for the B–747F include costs to start up and maintain a new logistics system and training base?

Mr. **Mosemann**. Yes.

Senator **Byrd**. General Allen, would you prefer procurement of the C–5 to the B–747F to provide military airlift capability for contingencies that most concern you as MAC commander? Why?

General **Allen**. My preference is to create an integrated airlift force that will provide a balanced inter/intratheater capability. The value of any aircraft must be viewed in relation to both existing and future airlift forces. There is an urgent need today for a high volume, intertheater airlifter. The military utility features of the C–5 such as outsize, roll on/off, and truck bed height floor make that aircraft my preferred near-term option.

COSTS OF LOGISTICS SYSTEM

Senator **Byrd**. Mr. Mosemann, how much would it cost to set up a logistics system and training base to support the Boeing 747F?

Mr. **Mosemann**. The cost for spares, support equipment, initial training, and other government costs associated with bringing the B747s on line would be approximately $15 million per aircraft in 1981 dollars.

KC–10 ADVANCE PROCUREMENT

Senator **Byrd**. Mr. Mosemann, is the KC–10 to be procured in fiscal year 1983 and later under a multi-year contract?

Mr. **Mosemann**. We are currently staffing a package for transmittal to the Congress that describes a multiyear with expanded advance buy procurement for 44 KC–10s to be procured in fiscal year 1983–87.

EXCLUSION OF KC–10 IN MULTI-YEAR CONTRACTS

Senator **Byrd**. Mr. Mosemannn, why was not the KC–10 included in Secretary Weinberger's list of multi-year contracts when the fiscal year 1983 budget was submitted?

Mr. **Mosemann**. The overall mobility decision was not made until late in the budget formulation cycle. As a result, the budget contained KC–10 prices and a procurement profile that had not been thoroughly reviewed by the contractor and the program office. After investigating over a dozen alternatives, we have now selected a multiyear with expanded advance buy profile which will be submitted to Congress soon.

QUESTION SUBMITTED BY SENATOR SAM NUNN

ADDITIONAL OUTSIZE AIRLIFT

Senator NUNN. In testimony before the SASC on March 17, 1980, Gen. Kelly H. Burke, USAF DCS/RDA, stated, "The Army modernization program planned for the 1980's will replace much of its current non-outsize inventory with heavier outsize firepower and mechanized equipment . . . the modern Army equipment will add to the present intertheater outsize shortfall which has emerged as the limiting contingencies." Does this remain a valid statement? Doesn't this indicate a need for additional outsize airlift?

ANSWER. There are significant shortfalls in all categories of airlift capability—outsize, oversize, and bulk—for NATO and non-NATO contingencies. However, as pointed out in CMMS, "there are diminished benefits to adding additional oversize capability without providing adequate balance with outsize capability."

747 OUTSIZE, STOL CAPABILITY

Senator NUNN. In testimony to SASC, February 19, 1980, Gen. B. W. Rogers, Commander, SHAPE, stated "Mobility needs in Europe include an aircraft capable of handling outsize cargoes and with short takeoff and landing capability (STOL). Short-field landing and outsize capability also enhances our ability to respond to contingencies outside of Europe." Does the 747 have the outsize and STOL capabilities required in NATO?

General ALLEN. The 747 does not have outsize or STOL capability.

INFANTRY FIGHTING VEHICLE

Senator NUNN. Doesn't the weight of the infantry fighting vehicle exceed the maximum weight limits of the loader? Since its physical dimensions preclude loading through the 747 nose door, I assume it is loaded through the side door. If so, how is it raised to the height of the cargo deck?

General ALLEN. The infantry fighting vehicle weights 41,136 lbs. in an air transportable mode. MAC Cochran 316E elevator loaders with a 40,000 lb. capability could be used to load this equipment. This would be done, however, only in an emergency situation (a 10 percent overstress factor is acceptable).

B747 OPERATION AT POPE AFB, N.C.

Senator NUNN. Could it take off from Pope AFB in the summer time? If so, would maximum payload be reduced?

General ALLEN. Yes, the B747 could take off from Pope AFB in the summer; however, its maximum take-off weight would be reduced to approximately 670,000 lbs. This does not necessarily mean, however, that its maximum payload would be compromised. If the scenario should require a maximum allowable cabin load of the B747 from Pope AFB, an en route stop could be made at a more suitable airfield to top off the fuel, and thus make the intercontinental trip possible.

B747 RUNWAY REQUIREMENTS

Senator NUNN. What is the runway length required to take off a Boeing 747 at its maximum gross weight of 820,000 lbs?

General ALLEN. As you know, Senator Nunn, this answer depends upon the temperature and pressure altitude of the airport from which the B747 is operating. However, as a point of reference, an 820,000 lb. B747 operating on a standards day at sea level would need 10,800 feet of runway to meet the Federal Aviation Regulation takeoff field length requirement.

MATERIALS HANDLING EQUIPMENT ADDITIONAL COST

Senator NUNN. What would be the additional cost to procure and deploy the special materials handling equipment which would be required if the B-747 were selected as an interim solution to the strategic airlift need?

General ALLEN. There may be no additional expense. We have some and are purchasing additional wide-body loading equipment to support the total airlift force mix. We will need that specialized equipment for CRAF and the KC-10 aircraft in any event. The aircraft force mix will dictate the mix of materials handling equipment we need.

B-747 DOWNLOAD

Senator **Nunn**. If the loaders are needed to accomplish off-loading, how would you get the loaders off the airplane?

General **Allen**. B-747 aircraft would not normally be flown to an airfield that did not possess the materials handling equipment necessary to work the aircraft. If, by chance, this did occur, our 'A' model Cochran elevator loaders could be transported in the lower lobe of the B-747 and be off-loaded with our modified 40K loaders. In any case, the elevator loaders are C-130 air transportable and would be moved via military transport prior to their need if no other alternative existed.

AIRLIFT QUANTITY

Senator **Nunn**. How much airlift would it require to deploy the loaders needed for B-747-200F operators? How long would it delay B-747 operators awaiting the delivery of this equipment?

General **Allen**. An exact number of aircraft is hard to define since it cannot be assured all airfields planned for B-747 use will be available at the advent of hostilities. MAC currently has 35 elevator loaders prepositioned for B-747 channel support. Additionally, there is a considerable amount of non-US owned equipment in Europe which we anticipate to be available for our use. Elevator loaders required for additive B-747 wartime missions would be prepositioned prior to their need; therefore, we don't believe B-747 operations would be delayed.

SPECIAL MATERIALS HANDLING EQUIPMENT

Senator **Nunn**. Isn't it true that special materials handling equipment would be required to accommodate the B-747F in MAC operations?

General **Allen**. MAC currently possesses some wide-body aircraft loading equipment to service the main deck of the B-747 and more is on order. The lower lobe compartment can be serviced by modified military 40K loaders which MAC currently has in its inventory, although specifically designed lower lobe loaders are much more efficient. We have requested funding for a minimum number of these loaders.

LOADING MILITARY CARGO ON THE BOEING 747

Senator **Nunn**. Would there be a problem associated with loading military type cargo aboard the Boeing 747F Commercial frieghters?

General **Allen**. Our experience during test loading we conducted in April 1978 and in Team Spirit exercises of 1979, 1980, and 1981 indicates that with an understanding of the characteristics and limitations of the aircraft and adequate planning and preparation, loading bulk and selected oversize military cargo in B-747 aircraft presents no unusual problems.

DEPLOYMENT OF ARMORED BRIGADE WITH B747S

Senator **Nunn**. Of all the types of military vehicles in an armored brigade, what percent cannot be carried by the B-747F? Based on vehicle weight, what is the percent of those same vehicles which cannot be lifted in that 747?

General **Allen**. To answer these questions, we analyzed the deployment requirements of a separate armored brigade using the type unit characteristics file (TUCHA), which is a standard JCS data base, and our current planning policies. The equipment parameters used for this brigade reflected reduced equipment configuration used by the Army to prepare equipment for air transportation. The results of this analysis indicate that 35 percent of the brigade's vehicles could not be loaded on B-747-200F aircraft. The vehicles which could not be loaded accounted for 75 percent of the total weight of the brigade.

ADDITIONAL OUTSIZE AIRLIFT REQUIREMENT

Senator **Nunn**. You can infer from the GAO report that the present C-5A force has more than enough outsize capability to satisfy "strategic airlift requirements." Is this accurate? Do we need any additional outsize airlifters?

General **Allen**. The present C-5A fleet can meet about one-half of the strategic outsize requirement. By the time we have acquired 25 MTM/D of additional capability, at least 10 MTM/D of additional outsize capability must be included to adequately project wartime forces.

BOEING 747 DIVERSIONS

Senator **Nunn**. I'm sure during cases of bad weather or congestion an aircraft must divert to an alternate airfield. What happens to the equipment on a Boeing 747 when it is diverted to an airfield that doesn't have this type of loading equipment?

General **Allen**. Every effort will be made to divert Boeing 747s to airfields with suitable offloading equipment. In those instances where this is not possible and cargo must be offloaded, equipment will be positioned to the diversion base using air or surface lift.

BOEING 747 FLOOR STRENGTH

Senator **Nunn**. Is the cargo floor on the Boeing 747 strong enough to carry the heavy equipment in an Army combat unit?

General **Allen**. We have gained operational experience in planning Boeing 747 military cargo loads to deploy Army combat units during Team Spirit joint training exercises in 1979, 1980, and 1981. We have also given considerable thought to how we would use the Boeing 747s that are part of the Civil Reserve Air Fleet in a contingency. During our 1978 test loading, the largest and heaviest items of cargo successfully loaded were some 5-ton trucks, such as the M-813, M-814, and M-818, the M-113 armored personnel carrier, and the M-730 Chaparral missile carrier. The largest item of military cargo we have flown during the Team Spirit deployment has been the M35A2C 2½ ton truck.

SPECIAL AIRLIFT REQUIREMENT WITH B-747

Senator **Nunn**. Can the Boeing 747 accomplish all the airlift special mission requirements?

General **Allen**. No. Certain special mission requirements must be accomplished by the C-5 aircraft. To allow flexible response in wartime, certain pieces of Army outsized cargo must be carried without disassembly. Other unique military capabilities, such as airdrop, vehicle drive off without ground handling equipment, or air refueling for extended operations are not available in the B-747.

747 AIRDROP

Senator **Nunn**. One important military transport feature is the capability to airdrop. Can the Boeing 747 conduct airdrop?

General **Allen**. No.

B-747 RUNWAY REQUIREMENTS

Senator **Nunn**. Doesn't the Boeing 747 require a high strength runway to land on?

General **Allen**. The B-747 aircraft runways strength requirement is generally consistent with the present generation of commercial wide-body aircraft. Most major commercial and military airfields can handle the B-747 and other wide-body commercial aircraft.

PALLET SUBFLOORS

Senator **Nunn**. I understand that the floor of a Boeing 747 must be covered with empty pallets in order to load drive-on vehicles. Does the military have enough of these pallets to conduct this kind of operation? If not, how much does it cost to acquire them and how long would it take?

General **Allen**. MAC has 2730 pallets authorized as War Readiness Material (WRM) assets for subfloor support. All of these pallets are currently on hand.

PALLET WEIGHT AND PAYLOAD CAPABILITY

Senator **Nunn**. What about the weight of these pallets and are they at the expense of payload capability? If so, how much is payload reduced?

General **Allen**. The weight of the pallet subfloor must be subtracted from the allowable cabin load. For example—a 33-pallet subfloor weighs 9,900 lbs or nearly 5 tons. This weight must be subtracted from the allowable cabin load.

C-5 USE ON SMALLER AIRFIELDS

Senator **NUNN**. The KC-10 and C-5N will be used primarily for delivering cargo from major airfield to major airfield according to the GAO report. Couldn't the C-5 land in smaller airfields if the situation called for it?

General **ALLEN**. The C-5 was designed with a high flotation landing gear so it could operate on airfields where other large aircraft would be prohibited. It also has the ability to take large outsize payloads into 4,000-5,000-foot runways. However, the C-5 is also the world's largest aircraft and this creates major difficulties in trying to operate it on smaller airfields. As a result, C-5 use of smaller airfields would be the exception rather than the rule.

PALLET RECYCLE

Senator **NUNN**. What do you do with these pallets after off-loading the equipment? Do they remain on the airplane and are they brought back to the States?

General **ALLEN**. All 463L pallets are scheduled for recycling to CONUS aerial ports for follow-on missions. Depending on mission requirements and aerial port cargo backlogs, they may return on the aircraft they were originally shipped on or return to the airlift system by other aircraft transiting the off-load station.

AIRCRAFT FACILITIES

Senator **NUNN**. I understand that the additional C-5s are going to be based at existing Air Force facilities which will avoid the cost to provide new facilities. If Boeing 747 aircraft were procured, would you require new facilities?

General **ALLEN**. We propose to bed down any new procurement of airlift at existing Air Force facilities to minimize the cost of construction, manpower requirements, maintenance facilities, etc. We will require additional facilities, such as increased ramp space, nose docks, and hangars, at our existing bases to accommodate the beddown of additional C-5s. Should we have a requirement to bed down the Boeing 747, we would require additional construction as our current facilities are being used to full capacity.

COMPARISON OF C-5, DC-10, AND B747 WEIGHT CUBE CAPACITY

Senator **NUNN**. From an efficiency viewpoint, an aircraft's cube and weight capacity should be matched to the density of the cargo to be carried. For example, an aircraft might be able to carry 10 tons of lead but only 100 pounds of ping pong balls because more won't fit inside the cube available.

How do you compare the C-5, the DC-10 and the 747 weight and cube capacity to the weight and cube characteristics of the various kinds of cargo that military requirements identify must be carried?

General **ALLEN**. In using weight per cubic foot of cargo capacity as a measure of efficiency, all three aircraft compare favorably when bulk cargo is considered. When oversize cargo is added, load characteristics should be evaluated before cargo density efficiency. The B747 has better oversize cargo characteristics than the DC-10 and the C-5 is better than the B747. The only outsize capable aircraft is the C-5.

LACK OF AIR DROP CAPABILITY

Senator **NUNN**. Wouldn't the lack of air drop capability seriously affect future military planning?

ANSWER. Yes. Air drop is vital for a full spectrum of military operations—from peacetime civil relief in disasters to combat employment of forces. To eliminate air drop capability would result in military operations (of all Services) that are restricted to areas with guranteed surface resupply. Air drop capability must be maintained to provide the military commander with the required degree of planning flexibility.

HIDDEN C-5 ACQUISITION COSTS

Senator **NUNN**. The GAO report indicates the C-5 acquisition costs are based "in large part on the unsolicited fixed price proposal." Does this imply hidden acquisition costs?

ANSWER. No. All other government costs have been budgeted for by the Air Force. The thrust of the GAO statement is that we do not have a signed contract at present. We anticipate having a fully definitized contractural agreement with Lockheed this summer.

KC-10'S TO REFUEL THE C-5'S

Senator **Nunn**. The GAO report states that based on Air Force studies use of KC-10's to refuel the C-5's would increase C-5 fleet capability by 3.8 MTM/D. However, the CMMS disregarded the use of aerial refueling because of minimal productivity. Would you comment on this difference?

Answer. The CMMS assumed both enroute basing and overflight rights were available in all allied or normally friendly nations. Additionally, the types of units deployed in CMMS scenarios required airlift of payloads usually constrained by floor space (volume) rather than weight thus refueling provided little improvement. CMMS however stated that refueling could provide a 3- to 5-percent improvement under the circumstances. Subsequent studies conducted by AF/SA indicated that air refueling could improve capability by 10 percent or more under ideal conditions. Realization of this enhancement, however, is dependent upon several variables (enroute basing, overflight rights, type of unit deployment, conflict area, etc.) and therefore should not be used as a rationale to reduce procurement of additional airlift capability.

Senator **Nunn**. The Heavy Division 86 Study has been approved by the Army for adoption for mechanized and armored divisions. As a part of this transition effort, procurement of the XM-1 tank, and the M-2 and M-3 Fighting Vehicles, Patriot, etc. will continue generally as planned. This new equipment, predominately outsize load items, will be assigned to both NATO oriented forces and general purpose forces for other areas of operations as well. Doesn't the currently planned and funded Army force modernization changes indicate a need for additional outsize capable airlifters to transport them?

Answer. The Army currently has both an inter and intra theater outsize airlift shortfall. As the Army continues to modernize the outsize requirement will continue to increase. Even though the Army is striving to reduce its airlift requirements through such efforts as the High Technology Test Bed, there still remains an outsize airlift requirement. The outsize cargo is not only the key firepower items but also combat support and combat service support equipment which is critical to sustain our forces.

An airlift aircraft designed to meet our wartime requirements, to include delivery of Army outsize equipment as far forward as possible, is crucial.

NEW C-5B CONTRACT

Senator **Nunn**. Is Lockheed "buying in" on the new C-5B contract? What assurance do you have that the proposed C-5N price is reasonable and the conditions are acceptable to the Government? What assurance is there that Lockheed can deliver 50 aircraft at the proposed price? Is it not true that Lockheed's C-5N proposal has been reviewed by the Air Force and that the propose prices and delivery schedule have in fact been found to be reasonable? How will Lockheed avoid cost overruns on 50 new C-5 airplanes?

Answer. To the best of our ability to estimate the cost of 50 new C-5s, our estimate and Lockheed's proposal were within 5 percent of each other (well within the estimating error). Although the Lockheed offer appears to be a very good deal, it does not appear to be a buy-in. Based on current wing mods schedule performance, the schedule (though ambitious) appears to be achievable. The contract we will negotiate with Lockheed will be fixed price; however, it will have cost schedule visability to allow us to monitor contract progress. The sum of these factors gives us confidence in being able to execute this buy within budget and on schedule.

Senator **Nunn**. In testimony to SASC on February 26, 1980, Gen. E. C. Meyer, Chief of Staff, U.S. Army, stated, "The requirement for intertheater airlift of outsize cargo will increase. The major deficiency in the current airlift fleet's capability is its limitation in carrying outsize cargo. . . . For worldwide contingencies the shortfall in intertheater airlift of outsize cargo is the Army's most constrained factor." Does this remain a valid statement? Doesn't it indicate that our future needs are for outsized capable airlifters?

Answer. Yes, the statement remains valid. There is an absolute, documented requirement for additional outsize airlift today and as the Army modernizes. The rapid movement of an effective combat force into a designated region of the world and sustaining that force for as long as required in support of national objectives is key to our force projection strategy. Today, there are a large number of potential trouble spots in the world which may require rapid airlift of combat forces. The threat dictates the U.S. force mix and the required delivery into the area of operation; these factors are highly scenario dependent. The majority of our combat divisions are composed of a large percentage of outsized equipment. For example, an

Armored Division has 43 percent or 27,628 short tons, a Mechanized Division has 40 percent or 24,478 short tons, and an Infantry Division has 25 percent or 7,984 short tons of outsized equipment. This outsized equipment represents the preponderance of the fighting hardware (i.e., tanks, infantry fighting vehicles, air defense artillery, self propelled artillery, and attack helicopters) of these divisions. The only aircraft presently capable of rapidly projecting this outsized equipment is the C5A transport. Our equipment is designed to counter the threat. Airlift programs must be based upon equipment lift requirements and not the converse.

C-5N CARRIES THREE CARGO CATEGORIES

Senator **Nunn**. Much debate is going on now concerning whether we should buy an outsize capable aircraft or an oversize-capable aircraft. The oversize advocates raise the question, "Is there enough outsize requirement to justify the 50 C-5N's that the Air Force has decided to buy?" The C-5N is often characterized as an outsize carrier. Isn't it true that the C-5N efficiently carries all three cargo categories—outsize, oversize and bulk? Isn't this fact the reason why the CMMS study states: "Iterations of the various lift levels with this measure (weighted shortfall) indicated, in general, that an outsize carrier providing both outsize and oversize capability is more efficient than on oversize carrier?"

Answer. The C-5 can carry all types of cargo—bulk, oversize and outsize. In general, outsize capable aircraft will provide better operational efficiency than aircraft limited to bulk and oversize cargo only. However, as pointed out in the CMMS, commercial freighters are more efficient carriers of strictly bulk and oversize cargo than are military airlifters.

COCHRAN 316A LOADER WEIGHT LIMIT

Senator **Nunn**. In the military configuration, the Cochran 316A loader has a maximum weight limit of only 25,000 pounds. How many pieces of equipment exceed this limit, and how would they be deployed?

Answer. The Air Force is not restricted to the 25,000 pound weight limitation on the Cochran 316A loader. We have recently purchased 29 E models of the Cochran and have 33 more on order. This later model has a 40,000 pound capacity. There are very few items of equipment normally moved by air that exceed this weight limit, and still fit into the cargo envelope of the B-747. An example of such an item would be the Infantry Fighting Vehicle (IFV) which weighs 41,136 pounds in the air transportable mode. The Cochran 316A loader could be used to lift this vehicle in an emergency, as a 10-percent overstress factor is permissible. Items of equipment which exceed these limitations would be moved by C-5 or by sealift.

NEED FOR ADDITIONAL OUTSIZE CAPABLE CARGO AIRCRAFT

Senator **Nunn**. Much discussion centers around the CMMS requirement for movement of outsized cargo. What other studies have been conducted in the past to quantify airlift requirements and, in particular, outsize movement requirements? Is there a need for additional outsize capable cargo aircraft?

Answer. Some of the recent studies that have dealt with airlift requirements include the Strategic Mobility Requirements and Programs studies (SMRP-82, 83, and 84), Boeing 747 and C-5A Comparison, Strategic Mobility Alternatives for the 1980s, Analysis of Airlift Enhancements, and Rapid Deployment Force (RDF) Deployment Capability.

To date, without the capability to move outsize cargo by air to/within the theater, we are unable to provide the field commanders with all the means necessary to defeat the enemy. Therefore, yes, there is a need for additional outsize capable aircraft.

The "needed" percentage of outsize airlift depends on the scenario chosen, the length of time considered within that scenario, and the total amount of airlift augmentation planned. Since completing CMMS, DoD has studied the appropriate mix of airlift aircraft types in considerable detail for CMMS Scenario I and examined the performance of the DoD program and an alternative that procure 747s in place of C-5s in all four scenarios.

In all four scenarios, a program that added no outsized capability would result in a force that was badly outsized constrained—that is, for the vast majority of units the delivery of outsized cargo would be completed one or more days later than the delivery of oversized and bulk cargo. Although some outsized cargo is also "delivered late" under the DoD program, the percentage is much less in every case. The detailed examination of Scenario I shows that about 25 to 30 percent of the augmentation must be outsized for that scenario.

Over the next five years, the DoD program adds about 17 MTM/D of airlift, about eight MTM/D of which is outsized. Our goal is to add a total of 25 MTM/D. The composition of the remaining eight MTM/D will be influenced by: the mix of aircraft found to be appropriate for this administration's planning scenarios, which differ somewhat from CMMS, intratheater airlift needs, perhaps, and the need to replace existing aircraft later in the 1990s.

We are confident that eight MTM/D, which is 30 percent of 25 MTM/D, is the minimum outsize augmentation we should procure.

10 MTM/D OUTSIZE ADDITION

Senator NUNN. CMMS analyses are quoted as stating that the 10 MTM/D figure is not an outsize requirement. Why did the CMMS recommend the 10 MTM/D outsize addition?

ANSWER. The 10 MTM/D outsize recommendation was part of a balanced approach to reducing the National mobility shortfall. Scenario demands in all instances exceeded national capability. Further, the Nation could not afford to eliminate the identified shortfalls in any of the mobility modes. Therefore, the CMMS developed a balanced, affordable program to reduce shortfalls. Included in the program was the 10 MTM/D of outsized airlift to reduce the gap between early day outsize requirements and capabilities.

REJECTING B-747 AS AN AIRLIFT OPTION

Senator NUNN. What specialized military features, absent in the B-747 commercial freighter, were considered by the Air Force in rejecting it as an airlift option?

ANSWER. The primary military feature that led to elimination of the B-747 freighter as an airlift option is the onload/offload of operational combat equipment. Though the B-747 can deliver a high percentage of the cargo required by combat units, it is slower than a military airlifter. The time differentials are a direct result of two requirements: first, cargo floor height requires specialized handling equipment and dictates offload at a location where the equipment is available; and second, equipment teardown/buildup is required for carriage and can add hours/days to total delivery time to combat. Military airlifters, with low cargo floor height and drive-on/drive-off in operational configurations, place equipment in the hands of the combat commander faster.

PLANS TO PURSUE AIRLIFT OPTIONS

Senator NUNN. Does the Air Force have any plans to pursue airlift options that will specifically address the shortage of oversize cargo capacity?

ANSWER. Yes, the Air Force has plans that specifically address the oversize shortfall. Current programs include C-141 stretch/ refueling modification, Other War Reserve Material (OWRM) procurement, Material Handling Equipment upgrade, and aerial port manning. Each of these programs enables more efficient use of current assests to enhance oversize capability. Two major procurement initiatives in the FYDP also reduce the oversize shortfall—KC-10 and Civil Reserve Air Fleet (CRAF) enhancements. The KC-10 will add approximatley 5 million-ton-miles per day of oversize/bulk capability. The CRAF enhancement program (modification of civil, passenger aircraft for cargo convertibility) will also add oversize capability. In addition, outsize aircraft programs (C-5) will aid in reducing oversize shortfalls.

MOBILITY STUDIES THAT CONCLUDE SHORTFALL IN STRATEGIC AIRLIFT

Senator NUNN. How many mobility studies have been conducted over the last several years that conclude that there is a shortfall in strategic outsized airlift to support rapid deployment of our forces? What is that requirement?

ANSWER. There have been at least four studies done recently which specifically address strategic outsized airlift to support rapid deployment of our forces.

The outsize lift requirement varies with the scenario in question. Also, the changing mix of military equipment, considered outsize causes a change in outsize lift requirements. The most recent study, the Congressionally Mandated Mobility Study, suggests that the addition of 20 MTM/D capability, while not able to meet the least demanding scenario, is an interim step toward correcting the shortfall. This study recommends that at least half of the added capability must be outsize to avoid an outsize constraint.

COST AND TIME TO ESTABLISH OTHER TOTAL SYSTEM CAPABILITIES

Senator **Nunn**. Have you considered the cost and time to establish other total system capabilities such as personnel training, technical manuals, spares, support equipment, and a depot repair system?

Answer. In considering the introduction of commercial wide-bodies into the organic MAC fleet, all analyses were based on a commercial support package similar to the one used for the KC-10. It includes all necessary time and costs to introduce, own, and operate these aircraft.

REDUCE TIRE PRESSURE OF THE BOEING 747'S

Senator **Nunn**. Well, if you reduce tire pressure to achieve a better LCN, would the reduced tire pressure allow takeoff at the maximum weight?

Answer. No. The B-747 cannot take off at maximum gross weight with reduced tire pressure. At tire pressures which make the B-747 comparable to the C-5 in LCN, the B-747 can take off with a payload of approximately 80 tons and enough fuel to fly 1000 nautical miles with standard fuel reserves.

PERCENTAGE B-747F LOADABILITY REQUIRES SPECIAL HANDLING

Senator **Nunn**. What percentage of the total B-747F loadability requires special handling or major disassembly? Would the extra time required for disassembly and reassembly offset the speed advantage of the 747 over the C-5B in evaluation overall utility?

Answer. Approximately 5 percent of the current major items of Army equipment which are loadable through the side or nose door of the boeing 747-200F require special handling or major disassembly. Whether the extra time required for disassembly and reassembly offset the speed advantage depends upon the number of each vehicle type to be moved and the distance to be flown. Additionally, an evaluation of overall utility must incude the level of maintenance required for assembly/disassembly in terms of skilled personnel and specialized equipment, as well as the time required.

AH-64 HELICOPTER LOADED ON THE BOEING 747

Senator **Nunn**. Can the new Army AH-64 helicopter be loaded on the Boeing 747?

Answer. Loadability of the AH-64 on the B-747 is unknown at this time. The stated transportability requirements for this helicopter do not include B-747 loadability.

DATA FROM THE CMMS RESULTS

Senator **Nunn**. The following data from the CMMS results has been supplied to the Committee by the GAO along with the suggestion that an airlift aircraft with oversize, main base capability becomes more effective than an outsize-capable aircraft as the level of the airlift capability purchased is reduced.

REDUCTION IN BASELINE SHORTFALL FOR VARIOUS LEVELS OF ADDITIONAL AIRLIFT

	10 MTM/D[1]	15 MTM/D[1]	20 MTM/D[1]
Outsize, austere field capable	3.4	4.9	7.8
Oversize, main airbase capable	3.8	5.5	6.2

[1] The levels of additional airlift are in units of millions of ton miles per day. Reductions in shortfall are in units of millions of weighted tons.

Isn't it true that these data are relevant for only one of the four CMMS scenarios, and that the trend for the other three shows that an outsize-capable aircraft is significantly more effective than the oversize-capable at the lowest level of airlift procurement?

Answer. The data shown, taken from Table 10.1 of the CMMS, are the results for Scenario IV. The results for Scenarios I, II, and III show the outsize capable aircraft as more effective than the oversize capable aircraft. A footnote to the Scenario IV results states: "Comparison of these two figures highlights an anomaly for use of tons as the measure. In this scenario the outsize airlifter, early-on, is carring outsize cargo that is significantly less dense than the cargo carried by the equally capable oversize fleet. With incremental additions, this difference becomes of lesser importance."

EARLY AVAILABILITY IN SELECTING C-5 OVER C-17

Senator NUNN. If early availability was the major issue in selecting the C-5 over the C-17, why not acquire commercial wide-bodies?

ANSWER. There are no commercial wide-bodied aircraft which can provide the outsize cargo capability offered by either the C-5 or the C-17. Outsize cargo capability is required in order to maintain a balanced deployment capability and have the flexibility to respond to changing scenario demands.

C-5 WING MODIFICATION INTERFERENCE WITH C-5B PRODUCTION PROGRAM

Senator NUNN. Will the C-5 Wing Modification program interfere with the planned C-5B production program?

ANSWER. No. The C-5B program is scheduled to mesh in with C-5 wing modification assembly. The combined assembly rate will be slightly lower than the design rate of the tooling and facilities.

DC-10'S AND B-747'S AS A NEAR-TERM SOLUTION TO THE AIRLIFT SHORTFALL

Senator NUNN. I understand the Air Force has considered a combination of KC-10's and B-747's as a near-term solution to the airlift shortfall. Please comment on this.

ANSWER. The Air Force has considered use of KC-10s and B-747s as a possible solution to the oversize/bulk shortfall. In that context, the mix involved organically owned and operated KC-10s and CRAF 747s. Since both aircraft have the same operational limitations and possess similar oversize/bulk cargo capability, the KC-10 was chosen as the organic airlifter because of its dual capability as a tanker.

COMPETITION BETWEEN THE C-5N, 747F, AND THE DC-10

Senator NUNN. The GAO report states there was not an open competition between the C-5N, 747F, and the DC-10 once the decision was made not to go with the C-17. Defense and Air Force witnesses have testified that all available aircraft have been considered. Would you please comment on this?

ANSWER. The Air Force evaluated all available aircraft and mixes of available aircraft which would do the complete intertheater airlift mission. That mission has two distinct parts: oversize/bulk cargo movement and outsize cargo movement. The KC-10 was selected over the 747 for the first part and the C-5 was seleted over a new design for the second part.

CONTRACTOR'S PERFORMANCE SUPPORT THE C-5N PRODUCTION PROGRAM

Senator NUNN. Does the contractor's performance on current programs support its ability to satisfactorily perform the C-5N production program?

ANSWER. Yes. Both the C-141 stretch and the C-5 wing modification programs are on or ahead of schedule and within budget.

PROPOSAL FOR PROCURING 747 MILITARY AIRLIFTERS

Senator NUNN. We have been seeing proposals for procuring 747 military airlifters for the last 12-15 years. As recently as March 1, 1982, the aircraft was rejected by the DoD for not having sufficient military utility. What's different about the latest 747 offer?

ANSWER. The capabilities offered in the latest B747 proposal have not changed. The latest proposal is the first to offer used passenger aircraft refurbished and modified to a freighter configuration.

PROCURING AN OFF-THE-SHELF COMMERCIAL WIDEBODY AS AN ORGANIC AIRLIFTER

Senator NUNN. In evaluating the possibility of procuring an off-the-shelf commercial wide-body as an organic airlifter, did the Air Force consider expenses associated with introducing a new system into inventory such as the establishment of a new training program for air and ground crews and the cost to stock list and handle new spare parts?

ANSWER. In considering the introduction of commercial wide-bodies into the organic MAC fleet, all analyses were based on a commercial support package similar to the one used for the KC-10. It includes all necessary costs to introduce, own, and operate these aircraft.

NEW PROPOSAL TO PRODUCE 747 CARGO AIRCRAFT

Senator NUNN. Has the Air Force received a new proposal from Boeing to produce 747 cargo aircraft? Are there any new features in the Boeing proposal that would enhance its attractiveness to the Air Force?

ANSWER. Yes, the Air Force has received an unsolicited proposal from Boeing for purchase and modification of both new and used B-747s. The Air Force is evaluating the proposal as a method of providing oversize/bulk airlift capability.

747 DAILY UTILIZATION SURGE RATE

Senator NUNN. Attachment 1 to the GAO report provides a comparison of the KC-10, C-5, C-17 and B-747 in several areas, one being Daily Utilization Surge Rate. The table shows the B-747 being able to achieve rates of 12.5 or 15.6 hours per day. The comparison of the 747 rates versus 12.5 for the C-5 and 15.6 for the C-17 appears optimistic. Can the 747 achieve these rates? If not, what effect does this have on the 747 fleet size and cost?

ANSWER. U.S. trunk carriers averaged a 10.5 hour utilization rate for B-747s during the second quarter of 1981 and United Airlines achieved 9.13 hour rate during July 1981. A surge utilization rate of 12.5 hours per day is reasonable. However, considering the ground time involved for a deployment requiring loading of vehicles through the side door at a 16 foot height above the ground and the fact that refueling cannot be concurrent with side door loading, a utilization rate of 15.6 hours for the B-747 is optimistic. Since the airlift requirement could be stated as flying hours per day (the product of utilization rate and fleet size), a decrease in utilization rate directly increases necessary fleet size and, hence, cost.

COST TO MODIFY 747'S

Senator NUNN. What would be the cost to modify the airplane so that it could be capable of air drop operations?

ANSWER. The B747 and other commercial wide-bodies have structural designs which preclude the addition of the large rear doors required to airdrop equipment. Troop airdrop may be possible with the addition of troop doors on the side.

NEED FOR 50 ADDITIONAL C-5N'S

Senator NUNN. It has been pointed out that the outsize cargo in the CMMS scenarios is significantly less than 50 percent of the total weight. Some people wonder why the Air Force supports the position that at least 50 percent of the added airlift capability to be procured must be outsize capable. It appears to me that these two percentages cannot be directly compared, and that the outsize cargo doesn't need to be 50 percent to justify the fact that the next airlift buy should be 50 percent outsize. Don't you have to go through a detailed analysis to see what total outsize airlift capability you need for a balanced deployment and then compare current outsize capability to what you need? Do such calcualations support the need for 50 additional C-5N's?

ANSWER. A detailed analysis is required to determine needed additional outsize airlift capability. The amount of additional outsize capability depends on both the total amount of capability added and the composition of the force to be moved. Since much of the outsize equipment required by the Army in the early days of a deployment is of relatively low density, such as helicopters, the amount of outsize airlift capaility required is not necessarily proportional to the weight of the outsize equipment. For example, when 20 million ton-miles per day of total airlift capability are added to CMMS scenarios I and II the amount which should be outsize capable to maintain a balanced force closure ranges from 24 percent to 92 percent (29 to 111 C-5Bs). The need for 50 additional C-5Bs is supported by these calculations.

QUESTIONS SUBMITTED BY SENATOR HENRY M. JACKSON

SUPPLIERS FOR C-5 INCLUDING SUBCONTRACTORS

Senator JACKSON. Please explain the statement on page 4 of the insert for the Committee record provided to me in which it is stated that 17 more C-5s will be delivered by the end of fiscal year 1987, giving us 3.8 million ton miles per day more capability. This statement seems at odds with the capability of 50 C-5s to give 8.2 million ton miles per day. That is, if 17 give you 3.8 million ton miles per day then 50 should give you 11.2 million ton miles per day, not 8.2 million ton miles per day.

How many suppliers are there for the C-5 including subcontractors?
How many of these are qualified as sources of supply today?

Answer. There are approximately 300 suppliers for the C-5A. It is estimated that approximately the same number of suppliers will be required for the C-5B. Lockheed considers 35 subcontractors as major.

Approximately 90 percent of the suppliers required to be qualified sources by Lockheed are currently qualified.

Under ideal loading conditions, 17 primary aircraft authorization C-5Bs could provide approximately 3.8 million ton-miles per day of additional outsize airlift capability. Of the 50 total C-5Bs requested, 6 will be backup aircraft to meet maintenance float requirements, etc. Under more realistic loading assumnptions 44 primary aircraft authorization C-5Bs will provide approximately 8 million ton-miles per day additional capability.

INCREASE IN BA AND BO

Senator Jackson. That is the clear indication of the statement; and given the budget constraints facing the Congress, that is the logical conclusion that one would draw from your statement.

How much increased funding in BA and BO was made available on a year-by-year basis in the DOD 5-year plan which permitted the decision to substitute the C-5 for the C-17?

Answer. The decision to procure the C-5 instead of the C-17 was only part of an overall mobility enhancement decision which also included restructuring the Civil Air Reserve Fleet (CRAF) and KC-10 program. This decision was made in response to the Congressionally Mandated Mobility Study (CMMS) which identified significant mobility shortfalls in airlift and recommended a miminum of 20 million ton-miles per day additional outsize/oversize airlift. The Air Force recommends that a mix of 50 C-5B and 44 KC-10 aircraft be procured as quickly as possible to reduce (not solve) the serious intertheater shortfalls in military airlift. The mobility enhancement decision increases inventories of C-5 and KC-10 aircraft in the near term and programs CRAF when commercial sales are expected to resume. Buying C-5B and KC-10s instead of the C-17 provides operationally available aircraft as much as three years earlier than the C-17 and takes advantage of favorable low risk contract arrangements, thereby providing an expeditious, cost effective, and logical approach to reducing the shortfall cited in the CMMS. The increased funding to support this airlift decision is reflected in the following comparison between the fiscal year 1982 and 1983 President's Budgets:

[Dollars in millions/includes initial spares]

	Fiscal year—				
	1983	1984	1985	1986	1987
President's budget:					
1982 [1]	656.9	2,025.8	2,555.0	2,486.7	TBD
1983 [2]	1,689.1	2,935.8	3,080.1	3,379.5	1,672.1
Difference	+1,032.2	+910.0	+525.1	+892.8	NA

[1] Includes estimates for C-17 (RDT&E and aircraft procurement), CRAF
[2] Includes estimates for C-5, CRAF, KC-10

BUDGET REDUCTION WILL REQUIRE C-17 VS C-5

Senator Jackson. In the insert for the Committee's hearing record which accompanied your letter, the statement was made that, "The Air Force originally recommended the C-176 vs the C-5 when funding constraints resulted in delivery profiles that were not significantly different for the two aircraft." You stated, "Given the opportunity to increase funding, as warranted by shortfall now, Air Force selected the C-5 because production deliveries could be made earlier than under the C-17 program.

Does this mean that if the Congress cuts the budget for airlift, that Air Force will again recommend the C-17?

Answer. The urgent need for improvement in outsize airlift capability mandates the acquisition of C-5Bs since any reasonable funding profile will provide usable outsize capability from a C-5 program sooner than from a C-17 program. The funding profile requested would increase the outsize lift capability at the earliest practicable time.

C-17 DESIGN BEING PLANNED FOR USE AS CIVIL AIRCRAFT

Senator **Jackson**. Please explain the meaning of the sentence: "This effort . . . civil aircraft." Is the C-17 design being planned for use as a civil aircraft?

Answer. No. The C-17 is not designed for commerical use. The research and development effort in the early stages of the program, however, will have wide-spread commerical application on later designed commerical aircraft. Areas being investigated include use of major composite structure and decreased aircrew workload as well as improved manufacturing technology.

IMPROVEMENTS INCORPORATED IN THE C-5N

Senator **Jackson**. Your letter says that there will be 240 improvements incorporated in the C-5N.

Are all of these improvements contained in the Lockheed fixed price proposal?

Answer. Yes.

REJECTING THE B-747F CIVIL AIRCRAFT AS AN AIRLIFT ALTERNATIVE

Senator **Jackson**. "Military utility," "training capability," and "logistic support elements" were given as deciding factors in rejecting the B-747F civil aircraft as an airlift enhancement alternative. Please define these requirements and provide the analyses used in assessing the B-747F against the requirements.

Your insert for the record set forth 7 specific shortcomings in the B-747 which were apparently the basis for a decision not a rebuttal to those stated shortcomings, and a copy of their submittal to me is attached for your further comment on any specific alleged shortcomings which you feel is in need of further explanation.

Answer. An aircraft's military utility is determined by those characteristics that allow it to perform its mission in the expected military environment. Required/desired wartime features for an intertheater military airlifter include outsize cargo capability, rapid onload capability, ground support equipment/facilities compatibility, austere field capability, and airdrop/extraction capability.

Loadability, particularly of outsize type cargo, is the major problem with the B-747. The Boeing Company provided data indicating a high percentage of loadability; however, to attain this percentage, a portion of the equipment requires special handling and/or major disassembly (removing rotors, snubbing wheels, and loading on special fixtures). In addition, it requires extra time and manpower for disassembly and reassembly.

Loadability of military equipment involves more than just clearances through the doors. Rapid on- and offloads are essential to the smooth, high-volume traffic flow expected in major deployments. Aircraft which offer drive-on and drive-off loading have significant advantages over those which require extensive high lift materials-handling-equipment support.

Boeing has offered a self-depolyable loading ramp to provide a drive-on/drive-off capability. They have also offered a deck-lowering nose jack for the same purpose; however, loading to an inclined floor would require vehicle tie down with drivers holding brakes—more time consuming and not as safe as level floor loading. Further, the B-747-200F cargo floor is not stressed for wheeled or tracked vehicles. Consequently, vehicles must either be loaded on pallets or a temporary pallet floor laid down to drive on, so the "drive-on/drive-off capability" offered is limited at best.

The B-747 also requires special equipment for ground refueling. Because of the height of the refueling point, special stands or trucks/hydrants are required. Military airlifter refueling points are accessible from ground level and allow refueling from either trucks or hydrants.

The B-747-200F has no airdrop/extraction capability and no realistic austere field capability.

Because the C-5 and KC-20a are already in the Air Force inventory, their training and logistics support bases are established. The Air Force has no such bases for a force of B747s.

REASONS FOR SELECTING C-5 WAS ITS EARLY AVAILABILITY

Senator **Jackson**. One of the reasons offered for selecting the C-5 was its early availability. What analyses were done by DoD or the Air Force which would confirm that the necessary personnel, facilities, tooling and other resources are available or can be made available in time to meet the proposed delivery schedule?

Answer. Lockheed's ability to produce the C-5 was evaluated from all aspects including personnel, tooling, facilities and subcontractor availability during the C-X source selection. This complete manufacturing readiness inspection found everything ready and adequate to pursue the program which they proposed.

OUTSIZE REQUIREMENTS FOR AIRLIFT CAPABILITY

Senator **Jackson**. During testimony, the statement was made that outsize requirements for airlift capability ran to more than 40 percent and even more than 50 percent under certain scenarios. This statement is at odds with the charts in the Congressionally Mandated Mobility Study, in Chapter 7, which states in Figure 7.2 that the total outsize requirement never exceeds 22 percent of the total volume in the first 20 days of the encounter. Please explain the error in the CMMS.

Answer. CMMS, Figure 7.2 reflects only Scenario IV requirements. Scenario I describes a larger outsized movement requirement. Overall movement requirements are developed based on the forces a supported CINC must employ to counter aggression in his theater. That portion of the movement requirement which is classed as outsized cargo will vary based on the type of unit deployed.

ACCOUNTING OF FORCES WHERE MORE THAN 40 PERCENT OF THE HARDWARE IS OUTSIZED

Senator **Jackson**. Please provide for the committee's record a detailed accounting of the forces which would be put into the field in a scenario where more than 40 percent of the hardware is outsized.

Answer. Approximately 41 percent of a mechanized division's equipment is now categorized as outsized cargo for air movement. In a modernized mechanized division the amount of outsized equipment increases to 55 percent of its inventory. The attachment contains examples of equipment. Infantry divisions are also increasing their amounts of outsized equipment: 26 percent of the equipment is now outsized. A modernized infantry division will have 33 percent of its equipment outsized.

MECHANIZED DIVISION

COMBAT VEHICLES	NO. IN DIVISION	SUPPORT VEHICLES	NO. IN DIVISION
TANKS*	290	HELICOPTERS (UTIL)*	48
FIGHTING VEHICLES*	399	HELICOPTERS (OBS)	54
CARRIER PERSONNEL	476	RECOVERY VEHICLES*	100
CARRIER CARGO*	178	CARRIER CP*	170
ATTACK HELICOPTERS*	50	SEMI-TRAILER*	245
FIELD ARTILLERY (8"/155T/MLRS)*	97	BRIDGE*	64
AIR DEFENSE (DIVAD)*	36	TRUCKS (5T/10T)*	734
		WRECKER*	71
		FORKLIFT*	36

PLUS ADDITIONAL 3852 COMBAT/CS/CSS VEHICLES

*INDICATE OUTSIZE

DETAILED BREAKDOWN OF EQUIPMENT WHICH CONSTITUTES THE OUTSIZE EQUIPMENT

Senator JACKSON. Please provide a detailed breakdown of all the equipment and the number of each item of equipment which constitutes the outsize requirement.

ANSWER. The attached list provides a summary of the outsize equipment found in the Army units of CMMS Scenario I, together with the quantity of each item of equipment. This list does not necessarily constitute an airlift requirement.

OUTSIZED VEHICLE SUMMARY FOR CMMS I ARMY UNITS

LIN	NAME	NUM
A30946	ACFT, UTIL *U-21A	3
B18647	TLR MTD, BAKERY PLANT *M-1945	5
B84130	BOAT, PICKET 36-47F *BOAT 4003	1
C82583	TRK MTD, CAMERA SET	1
D14593	TRK MTD, CARTOG SET	3
D79318	STLR MTD, TEL OFC *AN/MTC-9	2
E56578	VEH,CBT ENG, FTRAC *M728	2
E60194	STLR MTD, COMM CON CTR	8
F13075	TRK MTD, COPY SPLY	2
F39241	WHL MTD, CRANE, 5T *H-446	29
F39378	WHL MTD, CRANE 20T *2385	58
F40474	CWL MTD, CRANE *M855BG240T	6
F43364	CWL MTD, CRANE, 12.5T *36M	14
F43414	TRK CRANE, 20T *M320T	10
F43429	TRK MTD, HYD CRANE, 25T *MT-250	30
G27844	TRK MTD, BITUM DISTR *D60	18
G28212	TRK MTD, WTR DISTR TK *W15A61A2	39
G29945	WHL MTD, DITCH MACH *750	9
G55186	WHL MTD, BITUM DRIER *PM-415-MI	5
H01855	STLR MTD, ELCT SHOP *AN/ASM-189	42
H01857	STLR MTD, ELCT SHOP *AN/ASM-190	19
H30829	HCPTR, ELECTRONIC *EH-1X	3
J35663	TRK MTD, GEN SET *PU-700/M	4
J35698	GEN SET, DED, TRK MTD *PU-408/M	2
J74852	ROAD GRADER *12 WTRZ	88
J96694	ARTY, SP, 20MM *M163	24
K25205	STLR MTD, OIL HEATER *200S	5
K29694	HCPTR, ATTACK *AH-1S	81
K30449	HCPTR, CARGO *CH-47C	118
K31042	HCPTR, OBSN *OH-58A	100
K56981	HOW, HVY SP, 8IN *M110A2	24
K57667	HOW, MED SP,155MM *M109A1	18
K82205	GM INFOCOORD CENTL *AN/MSQ-95	7
K90188	TRK MTD, INST RPR SHOP *M185A3	25
L33321	TRK MTD, LAB SET	1
L33800	STLR MTD, PETRL LAB	1
L43664	TANK MTD, BRG LCHR	6
L76321	WHLD, SCOOP LDR, 5CYD	31
M07888	TRK MTD, MAP LAYOUT	1
M08025	TRK MTD, MAP REVUE	3
M54151	TLR MTD, CONC MIXER *16-SA	50
N19977	COMM OP CEN *AN/MSC-25	6
N75124	CWL MTD, PAVING MACH *SA-35	2
N87460	TRK MTD, PHOTO SET	7
N87960	TRK MTD, PHOTO SET	1
P03804	TRK MTD, PLATE PROC	1
P05898	PLATOON CP, GM IMHAWK *AN/MSW-1	6
P50041	TRK MTD, PRESS SECT	4
Q16040	TLR MTD, RADAR SET *AN/MPQ-46 I	17
R50544	VEH, RECOVERY, FTRAC *M578	20
R50681	VEH, RECOVERY, FTRAC *M88	32
R52776	TRK MTD, RECTIFIER	2
S12575	ROLLER, TWD, SHEEPFT *MD-96	43
S56256	SCRAPER, TWD *58 SH-G	77
S70661	STLR, LOW BED, 60T *M747 CHRY	32
S70791	STLR, LOW BED, 60T *M162	8
S71613	STLR, REEFER, 7.5T *M349A4	38
S73531	STLR, CARGO VAN, 6T *M119A1	1
S74079	STLR, CARGO VAN, 12T *M128A2C	12
S74216	STLR, ELEC VAN, 3-6T *M348A2 6T	4
S74353	STLR, ELEC VAN, 3-6T *M373A2 6T	1
S74490	STLR, VAN, 6T *M313	29

LIN	NAME	NUM
S74832	STLR, RPR VAN *M750 6TON	86
S75038	STLR, SHOP VAN, 6T *M146	14
S75175	STLR, SPLY VAN, 12T *M129A2C	189
S79045	TRK MTD, SVC, FLM THWR *M4A2	13
T10275	STLR MTD, SHOP EQUIP *SER-1968	22
T10412	STLR MTD, SHOP EQUIP *SEERS-197	12
T10549	STLR MTD, SHOP EQUIP *SGPRSM-68	10
T13152	TRK MTD, SHOP EQ ORG *SEROL-66	18
T21509	STLR MTD, SHOP SET, ACFT *B-1	2
T21646	STLR MTD, SHOP SET, ACFT *B-2	1
T21783	STLR MTD, SHOP SET, ACFT *B-3	1
T21920	STLR MTD, SHOP SET, ACFT *B-4	7
T22057	STLR MTD, SHOP SET, ACFT *B-5	1
T22194	STLR MTD, SHOP SET, ACFT *C-1	6
T22331	STLR MTD, SHOP SET, ACFT *C-2	3
T22468	STLR MTD, SHOP SET, ACFT *C-3	3
T22605	STLR MTD, SHOP SET, ACFT *C-4	3
T22742	STLR MTD, SHOP SET, ACFT *C-5	3
T22879	STLR MTD, SHOP SET, ACFT *C-6	3
T23016	STLR MTD, SHOP SET, ACFT *C-7	3
T23153	STLR MTD, SHOP SET, ACFT *C-8	3
T23290	STLR MTD, SHOP SET, ACFT *C-9	3
T23427	STLR MTD, SHOP SET, ACFT *C-11	3
T30414	TRK MTD, SHOP EQUIP	5
T30688	TRK MTD, SHOP EQUIP	4
T31784	TRK MTD, SHOP SET	12
T53858	TRK, MAINT, TEL/UTILITY *M876	6
U68809	TRK MTD, SURVEY SECT	4
V12312	STLR MTD, ASPH STOR TK	4
V39309	TELETYPW RELAY *AN/MGC-23	4
V60764	TLR MTD, TEST EQUIP *AN/MPM-46	1
V60901	TLR MTD, TEST EQUIP *AN/MPM-44A	1
V61038	TRK MTD, TEST EQUIP	1
V61175	TLR MTD, TEST EQUIP *AN/MPM-52	1
W88575	TRACTOR, FTRAC, LS *D8K8A-58	33
W88699	TRACTOR, FTRAC, LS *D8K-85-8	49
W90790	TRACTOR, WHL, IND *290-M	111
X23277	TRANS, FLTG BRG	132
X39187	TRK, BOLSTER, 5T *M815WWN	2
X44393	TRK, DUMP, 15T *LR	1
X44403	TRK, DUMP, 20T *F5070	172
X53983	TRK, MAINT, EARTHBORE *M764 WWN	20
X59600	TRK, TRACTOR, 10T *XM123E2 WWN	8
X60696	TRK, WKR TRACTOR, 5T *M819 WWN	37
X60967	TRK, TRACTOR, 22.5T *M746	32
X61929	TRK, VAN, 2.5T *M292A2	7
X62237	TRK, EXP VAN, 5T *M820	82
X62271	TRK, EXP VAN, 5T *M820A2	10
X62340	TRK, SHOP VAN, 2.5T *M109A3	150
X62477	TRK, SHOP VAN, 2.5T *M109A3 WWN	6
X63436	TRK, WKR, 10T GOER *M553 WWN	29
Y35486	TRK MTD, WTR PRFCN EQ	12
Y36034	TRK MTD, WTR PRFCN EQ *M105A2	7
Z33129	HCPTR, ADVANCED SCOUT *ASH	71
Z33149	HCPTR, ADVANCED ATTACK *AAH	231
Z33494	HCPTR, MULTEWS *EH-1U	9
Z33527	HCPTR, OBSN *OH-58C	126
Z41940	INFANTRY FIGHTING VEHICLE *XM-2	77
Z42003	CAVALRY FIGHTING VEHICLE *XM-3	36
Z42995	MINE NEUT LCHR (SLUFAE)+ XM134	20
Z65779	STLR, LOW BED *M872	896
Z77255	CBT TANK, FTRAC *XM-1	120
Z95101	TRK, TRACTOR, 6x4 *XM915	668

SHIPMENT THROUGH PORTS BECOMES A LIMITING FACTOR

Senator **Jackson**. In the conclusions of Chapter 8 of the CMMS, the statement is made that without sufficient intra-threater airlift capability, the problem of shipment through ports to the area of operations becomes a limiting factor?

How does the current decision on airlift address this shortcoming of intratheater requirement in the near term?

Answer. The decision to enhance airlift capability with the acquisition of 50 C-5s and 44 KC-10 aircraft will not lessen intratheater airlift shortfalls since these new aircraft are primarily suited for intertheater airlift operations. Nonetheless, the need for intertheater airlift capability is critical and must be addressed with, or without, a parallel program, to address intratheater needs. Throughout the 1970s, DOD has stressed to Congress the problems with intratheater airlift. The C-17 provided a partial answer to the intratheater problem with its direct delivery capability and its usefulness in the intratheater role. However, the total intratheater problem remains to be addressed.

NEAR-TERM REQUIREMENT CLOSE TO THE AREA OF OPERATIONS

Senator **Jackson**. How can the near-term requirement to get outsize equipment close to the area of operations be met without a short, austere airfield capable aircraft?

Answer. We cannot get outsize equipment close to the area of operations by air without small, austere, airfield, outsize capable airlift aircraft. However, today we attempt to compensate for our lack of capability through prepositioning (ashore/afloat). Prepositioning still requires road march and/or steaming time to close forces to battle. In addition, prepositioning can increase early day airlift requirements to marry-up forces with equipment. What we lack in capability (small, austere airfield outsize capability) we pay for in time bringing our forces into battle.

C-5 RESTART

Senator **Jackson**. The CMMS report in Chapter 9 states on page 9-3, ". . . a C-5 restart would require reopening a line for the TF-39 engine or using an existing commercial engine."

Does the Air Force plan to use the TF-39 engine for the C-5?

If so, how much of the tooling for this engine line is still in existence?

When was the last Air Force audit of this tooling made? Submit a summary.

Give a detailed critical path chart of the engine production schedule.

If the TF-39 is not going to be used on the C-5, does the Air Force plan, as stated on page 9-3 of the CMMS, to meet their requirement of a flight test program?

If so, how long will that flight test program require?

If not, why not?

Explain why the CMMS report was wrong.

Answer. To maintain commonality with the C-5A force, the Air Force plans to use the GE TF39-1C engine on the C-5B. C-5B engines will be provided to the Air Force by Lockheed as contractor-furnished equipment. The critical path for engine production has been evaluated by Lockheed in their delivery schedule offer. The tooling and plant facilities needed for the TF39 are substantially the same as the CF6-6, which is a derivative of the TF39. Most TF39-1C components are in production due to the spare parts and engine upgrade programs in progress for the C-5A force. TF39-1C engines are already flying on some of our C-5As, and no flight test program is required. A discussion of the complete aircraft tooling situation is presented in subsequent inserts for the record of this hearing.

C-5 RESTART RESULT IN A 44-MONTH TIME PERIOD

Senator **Jackson**. The CMMS estimate was that the C-5 restart would result in a 44-month time period prior to delivery of the first aircraft with appropriate priority and limited modifications.

What is the estimated delivery date of the first C-5?

Answer. The estimated delivery date for the first C-5B aircraft is 38 months after contract award assuming said award is no later than May 1, 1982 and assuming that the requested fiscal year 1982 funding level of $270M is available for obligation.

TIME INTERVAL FOR ALL 240 MODIFICATIONS

Senator **Jackson**. How do you explain the difference between the time interval for that delivery with all 240 modifications and the schedule in the CMMS on page 9-4?

Answer. The CMMS was accomplished in early 1981. Since that time, material and casting/forging lead times have decreased, allowing a reduced manufacturing schedule. The 240 modifications are primarily changes that have already been designed, manufactured, and incorporated into the existing C-5A force. Their incorporation into the C-5B does not affect the 38 month manufacturing schedule.

50 C-5S WILL PROVIDE 8.2 MILLION TON MILES PER DAY

Senator **Jackson**. The chart in your submittal to me for the insert into the Committee's hearing record states that the addition of 50 C-5s will provide 8.2 million ton miles per day capability. The CMMS states on page 10-7 that 44 C-5s will provide 10 million ton miles per day of capability. Which analysis is correct? How do you explain the error in the incorrect analysis?

Answer. The chart which states that the addition of 50 c-5s will provide 8.2 million ton miles (MTM) per day was based upon the use of 44 PAA (Primary Aircraft Authorization). The remaining discrepancy between that chart and the CMMS calculation of 10 MTM for 44 C-5s is due to an assumption concerning the average payload of the C-5. The CMMS used a payload of 75 percent maximum allowable cabin load (ACL) to characterize different airlift alternatives for summary purposes. Actual payloads were used in deployment simulations. The figure 8.2 MTM was derived from a lower payload which is more representative of performance in the CMMS deployment simulations.

LIFE CYCLE COSTS FOR PROCUREMENT OF AN OUTSIZE, AUSTERE AIRFIELD CAPABLE AIRCRAFT

Senator **Jackson**. On page 10-10 of the CMMS is Table 10.10 with figures in fiscal year 1982 dollars. The 20-year life cycle costs for procurement of an outsize, austere airfield capable aircraft would be between $14.8 and $18.2 billion for 10 million ton mile per day of capacity.

When this figure is compared to the figure in the table provided for the insert for the Committee's hearing record, there is a disparity because the cost of the C-17 when scaled to 10 million ton miles per day is $20.7 billion in 1981 dollars.

Please explain the change in your estimates between the CMMS and the current estimates.

Answer. The cost estimates contained in the CMMS were based upon a notional C-X aircraft of the type analyzed by the C-X Task Group in the winter of 1979/1980. The C-17, which was the C-X candidate selected in the summer of 1981, is a specific aircraft for which there are detailed contractor cost estimates.

DIFFERENCES BETWEEN PREPOSITIONING LIFE CYCLE COSTS FOR 20 YEARS

Senator **Jackson**. Please explain the differences between the prepositioning life cycle costs for 20 years for 100,000 tons of land-based equipment in Table 10.1 and the cumulative figures in Table 10.4 for prepositioning under Program A, Program B and excursion. The disparity seems too large when the different costs are allocated for one brigade of tanks—130,000 tons of resupply and ammunition and 120,000 tons for NATO support.

Answer. There are numerous combinations for funding profiles for each of the Programs. The funding profiles in Table 10.4 were constructed based on a specific set of assumptions regarding schedule and program feasibility. Rather than provide detail for the alternatives structured for table 10.4 (for which many of the elements are being executed, or certain assumptions relating to schedule have changed), the following tables provide a check of the numbers using data from Table 10.1.

TABLE 1.—PRE-POSITIONING PROGRAMS—ELEMENT COSTS

[In fiscal year 1982 dollars]

Element	Factor [1]	Procurement		O & S (20 yr LCC)		20 yr LCC range [4]
		Element [2] range	Range [3]	Element [2] range	Range [3]	
(a) 130 tons ammunition [5]	1.3	0.6–1.3	0.8–1.7	0.4–1.4	0.5–1.8	1.3–3.5
(b) MPS (1 brigade) [6]	0.5	1.1–3.6	0.6–1.8	3.3–2.1	1.7–1.1	2.3–2.9
(c) 120,000 tons unit equipment [5]	1.2	1.1–3.6	1.3–4.3	0.4–2.1	0.5–2.5	1.8–6.8
(d) 100,000 tons unit equipment [5]	1.0	1.1–3.6	1.1–3.6	0.4–2.1	0.4–2.1	1.5–5.7

[1] Factor related to 100,000 tons as defined in table 10.1.

[2] From table 10.1.

[3] Range equals factor times element range.

[4] Sum of procurement and O & S range.

[5] Range is for land-based to maritime-based.

[6] Range is determined from "charter" to "acquisition" for ships.

Table 2 provides a comparison of results from table 1 and table 10.4.

TABLE 2.—PRE-POSITIONING COMPARISON COSTS—CMMS PROGRAMS

[In fiscal year 1982 dollars]

Program	Program elements [1]	20 yr LCC range fiscal year 1982 dollars	Adapted 20 yr LCC 1983–90 costs [2]	Table 10.4 1983–90 costs
A & B	a+b+c	5.4–13.2	3.4–9.2	5.0–8.1
Excursion	a+b+c+d	6.9–18.9	4.6–13.3	6.3–9.6

[1] From table 1.

[2] Assume cost includes procurement during 1983–87 plus 5 years of O & S.

Note that the 83-90 costs from table 10.4 are within the range of the "Adapted 20 Yr LCC".

The question specifies a comparison between land-based (100K tons) prepositioning and prepositioning elements for Programs A, B, and Excursion. Table 1, on the previous page, shows that this would be an incorrect comparison, since the three programs are a combination of land- and maritime-basing modes.

B-747 AND THE DC-10-30S CREATED UNACCEPTABLE PROBLEMS

Senator **Jackson**. Testimony at the hearing for the Cohen Subcommittee on March 19, 1982, indicated that the B-747 and the DC-10-30s created unacceptable problems in loading and unloading equipment.

How does this statement comport with the plans of the Air Force to use these planes as part of the CRAF program?

Answer. The B-747 and the DC-10 are clearly more difficult to load than military transports like the C-5 and the C-141. Their cargo decks are 15 to 18 feet above the ground and are much more susceptible to damage while loading and transporting some of the heavier vehicles. Loading door size and location also causes problems. The Air Force is willing to put up with these problems and to plan, as much as possible, to minimize them for the CRAF because the CRAF is so cost effective. The Air Force does not own these aircraft and, therefore, does not face the operating, maintenance and training burden imposed by aircraft in the military inventory. The loading problems remain for the CRAF aircraft, but they are tolerated in an attempt to make optimum use of existing national airlift assets.

B-747 IN THE TEAM SPIRIT EXERCISE

Senator **Jackson**. How does this statement square with the experience with the B-747 in the Team Spirit exercise?

Answer. As we have always stated, Team Spirit exercises have shown that the B-747 is an excellent oversized and bulk carrier when operating between established airfields which have elevator loaders.

PROVIDE PAGES FROM THE TEAM SPIRIT REPORT

Senator JACKSON. Please provide any pages from the Team Spirit report which support the statements made regarding the undesirable nature of the B-747 for unloading due to the high deck.

ANSWER. Team Spirit is an annual exercise in the Pacific. There is not just one Team Spirit report. Each major exercise participant writes an after action report. For us to respond, we must know the year and whose Team Spirit report you are addressing.

AUDIT OF THE C-5 TOOLING

Senator JACKSON. When was the most recent audit of the C-5 tooling, both for the contractor and for major subcontractors?

ANSWER. A complete inventory of all C-5A production tooling was accomplished in 1974 when the tools were placed in storage. Since then, tooling has been reactivated to support spare parts production, the wing modification program, and engineering changes. In 1981, the government conducted inventories in support of Air Force tool storage agreements with Rohr, Convair, and Kaman.

In October 1981, Lockheed conducted on-site reviews of C-5 tooling at Canadair Convair, and Rohr. Lockheed also reviewed the major C-5 mating fixtures located at Air Force Plant 6 at the Lockheed-Georgia Co.

Prior to final contract award, the Air Force will conduct additional tooling surveys at Lockheed and the major subcontractors.

RESULTS OF THE C-5 AUDIT REPORT

Senator JACKSON. What were the results of that audit report, in terms of tooling, that was missing or sufficiently in disrepair to require replacement?

Please provide a detailed accounting.

ANSWER. The government inventory at Rohr in 1981 showed 200 tools missing out of 10,700 tools stored under the Air Force storage agreement. At Convair, 111 tools were missing out of 5317 tools stored. Kaman's inventory status was termed excellent. Kaman is currently producing spare parts and various parts for the wing modification program. The Air Force is currently negotiating a spare parts buy with Kaman for engine thrust reversers. AVCO currently has 27,000 tools in use on the wing modification program.

At Canadair, Lockheed determined that out of 20,583 tools stored, 439 need replacement, 401 tools stored outside need considerable refurbishment, and the remainder were in good condition. At Convair, 7456 tools are stored under a Lockheed Storage Agreement. It was determined that 1194 tools need to be replaced and the remainder need some refurbishment.

The Air Force Plant Representative's office at Lockheed-Georgia Company has cognizance over approximately 104,000 tools. The tools are in inactive storage; however, the majority are stored inside and the expensive major mating fixtures are considered to be in good condition. The wing mating dock is being used for the wing modification program. The extent of refurbishment required for the remainder of the tools will be determined by the government tool survey team prior to contract award.

Additionally, other suppliers such as General Electric (engines), Menasco (landing gear), Canadair (miscellaneous wing parts), Lockheed-Georgia Company, and others are currently producing parts for the C-5A. The Lockheed proposal allocated over 3 million man-hours for refurbishment, replacement, and set-up of tooling.

PROVIDE A DAY-BY-DAY REQUIREMENT FOR KC-10 TANKERS

Senator JACKSON. Under each of the scenarious in the CMMS, provide a day-by-day requirement for KC-10 tankers to support airlift requirements for both tactical air and cargo aircraft.

ANSWER. Under the assumptions of the CMMS scenarios, enroute basing and overflight rights were available and no tanker support was required for cargo aircraft. Tanker support requirements for fighter deployment were not analyzed in the CMMS.

ONLY OFFERS RECEIVED WERE FOR DC-10'S

Senator JACKSON. Do you attach any significance to the fact that the only offers received to acquire widebody aircraft from the commercial airlines were for DC-10s and that no B-747s were tendered?

Answer. No. The Boeing Company included an excusable delay clause in their terms which imposed a considerable burden of risk on airlines who wished to bid B-747s. Due to this risk the airlines could not make the firm fixed price offer needed to respond to the Civil Reserve Air Fleet Enhancement Program Request for Proposal.

BREAKDOWN OF TOTAL TONNAGE

Senator **Jackson**. For Scenario I of the CMMS, please provide a total tonnage with a breakdown as to troops, bulk, oversize and outsize equipment fot the force set forth in the scenario.

Answer.

	Troops	Tonnage			
		Bulk	Oversize	Outsize	Total
Army	92,892	21,236	108,035	87,963	217,234
Air Force	27,314	7,034	12,110	1,071	20,215
Navy	9,508	58,239	698	244	59,181
Marines	114,490	76,695	5,892	37,754	120,341
Subtotal	244,204	163,204	126,735	127,032	416,971
Resupply/ammunition		1,537,407			1,537,407
Total	244,204	1,700,611	126,735	127,032	1,954,378

Senator **Jackson**. Please provide the committee a copy of any paperwork submitted to the Department of Defense by the Project on Military Procurement, a non-profit organization.

Answer. After considerable research, we in the Air Force are unable to locate any paperwork submitted to it from the Project on Military Procurement.

WHETHER A C-141 OR A C-5 WILL SHOW UP FOR LOADING

Senator **Jackson**. Isn't it a fact that the Army routinely does a breakdown of equipment so that things which are normally considered outsize are in many cases reduced in size so that they can fit in a C-141 because they are not able to know with certainty whether a C-141 or a C-5 will show up for their loading?

Answer. Yes, the Army routinely breaks down equipment based on guidance contained in Army Regulation 220-10, "Preparation for Overseas Movement of Units." Reductions are limited to those which can be accomplished by a unit's organic maintenance capability and are assumed for all contingency planning and requests for airlift support. Equipment which is still "outsize" requires a C-5 airlift while other cargo can be transported by a variety of aircraft to include both the C-5 and C-141.

ROUTINE PRACTICE OF THE ARMY

Senator **Jackson**. What does this routine practice of the Army do to the amount of outsize hardware for forces contemplated under Scenario I?

Answer. The equipment lists compiled for the Congressionally Mandated Mobility Study generally assumed maximum breakdown of equipment. If guidance in Army Regulation 220-10 were followed and only "routine" reductions were assumed, additional outsize cargo would have been identified.

C-141 CLEARANCE OF THE THREE INCHES

Senator **Jackson**. Historically, the clearance for the C-141 has been three inches. Recently, as considerations for the CX evolved this clearance was increased to six inches. If we return to the C-141 clearance of the three inches, what does this change do to the outsize requirements of the Army?

Answer. Loading outsize equipment to close tolerance impacts the Air Force in terms of operational capability and cost. With adequate clearance, an aircraft may be loaded and unloaded quickly. This saves time, which is important to the commander in the field; and it saves money by reducing the need for special handling equipment.

Adequate clearance is also important while loading and unloading rolling stock such as tracked vehicles or trailers. It is inherently more difficult to drive a large vehicle such as the Army's Infantry Fighting Vehicle safely onto an aircraft than it is to load palletized cargo.

With these considerations in mind, the Air Force uses a 6-inch clearance as a planning factor for use by Army equipment designers and aircraft contractors. Operationally, however, we operate our aircraft using lower tolerances as necessary to get the job done fully realizing that this reduces the margin of safety and increases both onload and offload time. In practice, we operate both the C-5 and the C-141 using the 6-inch guideline whenever possible. When these parameters are met, normal technical order procedures are used. However, when clearance will be less than six inches special handling procedures are developed and used, and in some cases may result in clearances even less than the 2-inch commercial criteria. Therefore, there would be no significant change in the planning and loading of Army outsized requirements.

AERIAL REFUELING OF C-5

Senator **Jackson**. Aerial refueling of the C-5 will increase its effective capability so that our existing fleet would have greater airlift capability for outsize hardware.

For each of the four scenarious, what is the increase in our outsize airlift capability, due to aerial refueling of the C-5s in our current inventory?

Answer. For airlift of the Scenario I forces required before the earliest possible sealift delivery, air refueling the existing C-5's reduced the outsize closure by 12 percent if C-5s were dedicated to outsize movement. Similar analysis has not been accomplished for the other scenarios.

DENY FUNDS FOR THE C-5 OR THE C-X

Senator **Jackson**. If the Congress were to specifically deny the use of funds for the C-5 or the C-X, how would the Department of Defense propose to meet its force projection requirements? And how would those requirements be reassessed?

Answer. Denial of funds for the C-5 would seriously affect this nation's force projection capability. Without improvement of the airlift force in mobility programs this nation faces increasing risk in the pursuit of national goals and security. Two specific alternatives could be employed to offset the loss of funding for the C-5 aircraft: an increase in current prepositioning programs and/or an increase in fast sealift capability. Both of these alternatives are unacceptable as they do not provide the flexible worldwide rapid deployment capability of an airlift force. Therefore, this nation's ability to respond to any crisis is significantly encumbered. Acquisition of the C-5B provides a portion of the airlift capability recommended by the CMMS in the near term and enhances our force projection capability.

C-5'S ASSIGNED TO MAC

Senator **Jackson**. Your testimony during the hearing indicated that the C-5 performed admirably during the airlift for the 1973 Middle East War. However, that statement seems to be at odds with the statements in the GAOs report dated April 16, 1975 on page 12 where 60 percent of the C-5s assigned to the Military Airlift Command were inoperable each day of the airlift.

Answer. Both my statement and the GAO report are accurate.

First, the C-5 along with the C-141 provided over 22,000 tons of cargo during the first 32 days of resupply to Israel. This airlift movement was accomplished in spite of major political constraints which limited route selection, overflight, and basing options. The C-5 did perform admirably.

Second, a mission capable rate (or operational ready rate) is sometimes interpreted as the probability that an aircraft is available to perform an assigned mission, without notice, at a random point in time. This interpretation is incorrect because the measure of mission capable rate is made under peacetime conditions, and thus are indicators of peacetime materiel readiness. Trends in these rates tell us more than the absolute percentage value of the rates themselves. To obtain a better absolute measure of initial wartime responsiveness, the Air Force has a readiness reporting system that projects aircraft condition status based on mission reaction time, wartime maintenance work days, unrestricted use of war readiness materiel, and unrestricted cannibalizations. The Air Force's readiness goals are consistent with these ground rules which are more meaningful and realistic than the prevailing peacetime ground rules under which the standard MC rates are computed.

ARE C-5'S AIRWORTHY?

Senator **Jackson**. On any given day, how many of our existing C-5's are airworthy for airlift missions?

Answer. During fiscal year 1981, approximately 53 percent of the aircraft available to MAC were mission capable. MAC averaged 65 possessed aircraft therefore a snapshot would show approximately 34 aircraft to be mission capable. However, it should be recognized that contingency plans call for an aircraft generation phase during which every aircraft possible will be returned to mission capable status. Under the conditions which prevail during a maximum generation effort the number of mission ready aircraft is expected to reach a minimum of 58.

MAXIMUM NUMBER OF C-5'S THAT MAC CAN HAVE AVAILABLE

Senator **Jackson**. What is the maximum number of C-5s of our existing 77 C-5's that the MAC can have available in a heightened alert requirement?

Answer. The maximum acceptable number of C-5 aircraft out-of-service is driven by peacetime and wartime considerations. During peacetime, MAC has established a maximum C-5 out-of-service total of 19 aircraft (58 aircraft available). The 19 C-5 aircraft out-of-service include all aircraft down for programmed depot maintenance (PDM), unprogrammed depot maintenance, wing modification and time compliance technical order requirements. Within approximately 90 days after a wartime preparation/implementation directive is received, we estimate that MAC can generate up to 70 primary aircraft authorized (PAA). This is the maximum number of aircraft that would be available worldwide.

PROCUREMENT OF 10 MTM/DAY

Senator **Jackson**. Provide for the record the specific reference in the CMMS that recommends procurement of 10 MTM/Day of outsize airlift.

Answer. CMMS Vol II, page 10-29, para 10.9, line 2. "Program A is recommended. . . ."

CMMS Vol II, page 10-17, para 10.7.1, line 5. "Program A adds 20 million-ton-miles/day (MTM/D) of outsize/oversize airlift. . . ."

CMMS Vol. II, page 10-16, para 10.7.3, line 10. ". . . .the lower bound consists of an oversize/outsize mix with at least half outsize capable."

NUMBER OF DAYS TO MOVE EQUIPMENT WITH C-5AH AND C-141B'S

Senator **Jackson**. Using CMMS Scenario I Forces, provide for the record: (a) the number of days required to move only the outsize equipment with 70 re-winged C-5AH aircraft and (b) the number of days required to move only the oversize equipment and bulk cargo using C-141B and CRAF aircraft.

Answer. The C-5A would never be required to move all of the outsize in the CMMS Scenario I Forces, since the movement requirement is a total lift requirement which must be met with a combination of airlift, sealift and prepositioning. One way of estimating the answer is to make the assumption that the airlift requirement consists of the forces which must arrive prior to the arrival of sealift less any prepositioned equipment. Making the assumption of [deleted] day airlift requirement based on CMMS Scenario I forces, 70 C-5As (after wing modification) required [deleted] days to move the outsize equipment. Using 234 C-141Bs plus CRAF plus the 70 C-5s (after they had finished with the outsize equipment), oversize and bulk required [deleted] days.

SUPPORT STATEMENTS THAT THE FORCES ARE 30 TO 35 PERCENT OUTSIZE

Senator **Jackson**. The CMMS scenario showed outsize fractions ranging from 12 to 27 percent. Provide for the record your analysis which supports statements that the forces are 30 to 35 percent outsize. Provide specific listings of new equipment which will increase the outsize fraction to as high as 55 percent.

Answer. Illustrations in the CMMS reflect an outsize airlift requirement of from 12 to 27 percent of the total air movement requirement during the first 30 days of various scenarios. Approximately 30-35 percent of the total (air and sealift) movement requirements consists of outsize equipment.

Approximately 41 percent of a mechanized division's equipment is now categorized as outsized cargo for air movement. In a modernized mechanized division the amount of outsized equipment increases to 55 percent of its inventory. The attachment contains examples of equipment. Infantry divisions are also increasing their amounts of outsized equipment: 26 percent of the equipment is now outsized. A modernized infantry division will have 33 percent of its equipment outsized.

IMPACT OF ADDITIONAL OUTSIZE-CAPABLE AIRCRAFT IN CMMS SCENARIOS

C+	Outsized cargo closed at final destination (tons)				Percent increase over baseline		
	1986 Baseline	+10 MTM/D	+15 MTM/D	+20 MTM/D	+10 MTM/D	+15 MTM/D	+20 MTM/D
Scenario I:							
5	734	972	1,094	1,273	32	49	73
10	3,506	3,569	3,799	3,961	2	8	13
15	5,810	8,276	9,162	9,749	42	58	68
30	16,140	19,238	24,615	26,379	19	53	63
45	20,600	21,154	27,369	28,731	3	33	39
60	(1)	(1)	(1)				
Scenario II:							
5	1,684	2,199	2,857	3,332	31	70	98
10	[illegible]	6,666	7,165	7,952	88	102	124
15	10,424	14,253	15,740	16,415	37	51	57
30	24,455	30,263	30,330	30,328	24	24	24
45	39,735	45,369	51,450	56,273	14	29	42
60	56,036	58,455	70,268	73,968	4	25	32
Scenario III:							
5	2,504	2,504	2,504	2,504	0	0	0
10	4,368	11,728	12,411	13,564	168	184	211
15	14,224	27,229	29,753	30,861	91	109	117
30	45,986	61,391	69,191	82,469	33	50	79
45	74,976	117,780	137,037	152,851	57	83	104
60	100,196	162,252	174,834	199,713	62	74	99
Scenario IV:							
5	998	1,005	1,109	1,187	1	11	19
10	4,207	7,234	7,905	8,803	72	88	109
15	7,433	11,006	11,334	12,007	48	52	62
30	21,731	33,304	36,714	46,335	53	69	113
45	43,377	60,439	69,792	85,740	39	61	98
60	67,571	108,026	129,619	144,568	60	92	114

[1] Deployment completed by C+45.

OUTSIZE FRACTION OF MAC'S CAPABILITY IS LESS THAN 30 PERCENT

Senator Jackson. Provide for the record the analysis which shows the outsize fraction of MAC's capability is less than 20 percent. Show outsize/oversize fractions by year for the period 1982 to 1989. Include a discussion of the effect of using KC-10s to refuel C-5Hs on the outsize/oversize relationship.

Answer. The analysis composing MAC's outsized capability to its total lift capability from 1982 to 1989 is attached. Air refueling the C-5A/B with the KC-10 could improve its productivity by approximately 10 percent under ideal circumstances. It would not affect the outsized/oversized relationship.

SPECIAL EQUIPMENT REQUIRED TO LOAD/UNLOAD THE B-747

Senator Jackson. What special equipment will be required to load/unload the B-747 that is not already in use to support CRAF widebodies or the KC-10?

Answer. No special equipment will be required to load/unload the B-747. Existing and programmed materials handling equipment, elevator loaders and lower lobe loaders, are compatible with the B-747. However, the existing and planned Air Force inventory of this type of equipment is insufficient to support the acquisition of a large number of additional B-747s.

PROVIDE DETAILED LISTING OF ALL 240 IMPROVEMENTS TO C-5N

Senator Jackson. Please provide a detailed listing of all 240 improvements, including identification of which ones are in the original Lockheed proposal.

Give an estimated cost for any changes advocated by the Air Force or DoD.

ANSWER. Attached is a list of 240 engineering change proposals (ECPs) that the Air Force has approved for the C-5A above and beyond those incorporated in the final production aircraft. Most have already been designed, manufactured, and incorporated into the existing C-5A force. The list does not include superseded ECPs, engine ECPs, inspection ECPs, and the wiring diagram portion of ECPs. All items on the list are included in the Lockheed fixed price proposal for the C-5B.

The Lockheed fixed price proposal also includes the new 30,000 hour service life wing, GE TF39-1C engines, improved avionics, and more durable and corrosion-resistant aluminum alloys.

The following improvements (over and above the Lockheed fixed price proposal) are required by the Air Force to meet operational or safety requirements:

a. Upper deck troop compartment kit (currenty in C-5A).
b. Nitrogen fire suppression in unmanned areas (currently in C-5A).
c. MIL-H-83282 hydraulic fluid (less flammable fluid).

The troop compartment kits represent approximately $27 million (in then year dollars) of the total cost of the C-5B program. The other two improvements are not expected to have major cost impact.

	ECP No.
Eng fan windmill stop and storage	500
Ramp ext. fwd hinge forged sur. (spares)	546
Stabilizer augmentation system	594
Auto throttle computer	651
Manifold, rudder servo (spares)	702
Mlg outbd door support fittings (spares)	718
Inbo logistic rail detent assy	750
Flight director update	805
Autopilot update	836
Fwd ramp agt. support fittings (spares)	879
Slat actuator doors	883-16
Slat rework	883-26
Flap handle marker instl	883-34
Fairing assy. flap track w.s. 751.6 (spares)	883-86
Mlg door alignment ramp instl.	884-17
Nlg, gound lock safety pin	884-22
Ail servo connector moisture protection	884-24
Mlg wheel well hyd. plumbing guard	884-26
Crank, clear vision windshield	884-28
Apu inlet duct drain hole	884-35
Nlg streamer added to loose equip list	884-36
Add weapons storage container (Not tooled by Gelac)	884-40
Elect pwr feeder protection over galley	884-42
Clips, mlg brake rotor drive slots	884-49
Single point refueling cap latch	885-66
Visor lock actuator assy	885-69
Nlg gear box/retorquing 7 safety wiring	885-72
Csd oil line support	885-74
Fire detection element deletion	885-76
Personnel restraint strap ident. decal, wing tip	885-80
Ducts obstructing mlg viewing window	885-82
Mlg brake assy hyd kneeling	885-87
Plate instl. center cargo door	885-90
Fus. jack adapter pads	885-91
Visor drain lines	886-02
External pwr recpt shield	886-04
Keel beam finishing	886-06
Winch compt drainage	886-07
Aft side cargo door actuator cam	886-09
Horizontal stabilizer bullet fairing access pnl	886-10
Aileron servo	886-12
Fwd ramp grd support pad	886-18
Material change—fail-safe strap—pylon	884-55
Wing to pylon fitting attachment hardware	884-69
Cabin press control box mounting	884-85
Mlg emer. rotation cylinder rework	884-93
Sealant bead for slat track stops	885-19
Mlg kneel pin retention bolt	885-21
Aft crew bunk compt door lock (move to Fwd Bunk Comp)	885-26

	ECP No.
Ctr wing beam web to floor shear pnel (See Ecp 6605)	885–37
Mlg bogie non-skin coating	885–39
Iff computer mount change	885–41
Aft cargo door wiring change	885–47
Mlg roll and gudgeon pin corrs. protection	885–48
Elev. control wiring change	885–49
Aft press door upper hinge locking blocks	885–52
Inbd pylon access panel rework	885–53
Apu compt drain line	885–55
Aileron counterbalance fairing drain hole	885–56
Mlg door wiring clamp	885–58
Pt2 probe anti-ice provisions	885–60
Cdpir emi filter adapter	885–61
Lift distribution control sys. (LDCS)	900
Slat mechanical stop instl	953
Press door hinge fitting	964
Pylon/apron cowl drs seal revision	980
Cable retainer clip static line retriever	6006
Emergency & service door personnel serv. gates	6007
Mlg brake comp link	6090
Service door uplock fs 1884	6109
Crew galley sink drain	6124
Fwd ramp extension jack support	6129
Access for flap lubrication	6172
Remove hyd manifold covers	6193
Pylon support fitting attach bolt	6209
Inbd logistic rail, retract lip release	6210
Portable oxygen bottle (required with troop kit)	6211
Aft cargo door bayonet side latch	6213
Logistic rails, aftramp	6215
Visor hook back-up structure (Also see ecp 6671)	6250
Nlg kneel roller	6264
Upper lobe outer frame cap	6294
Rh underfloor bkhd lwr cap end fittings	6299
Upper lobe hf/ssb removal catwalk (catwalk only)	6302
Mid win lwr panel runout	6303
Visor door catwalk rbl 23.5	6313
Apu hyd start shutoff valve	6322
Flap act. sys. thrust bearings	6325
Eng. instrument cooling	6338
Apu cooling fan revision	6339
Wing te and le attachment	6345
Fwd ramp longitudinal beam	6348
Frame beef-up FS 1106 and 1383	6350
Autopilot servo update	6354
Addition of Zener diode/register box to Madar D/O unit	6357
Ctr wing upper lobe clips	6362
W.S. 577 joint splice	6363
Hyd reservoir fill markers	6375
Inner wing LWR surface spanwise splice fasterner	6377
Interphone sys. revision	6384
Mlg slot door hinge fittings	6387
Cdpir emi correction	6394
Pivot fittings, AFT stair ladder	6396
Aft ramp, anti-skid mat	6398
Drag angle support	6401
Spoiler position indicator deletion	6403
Self retaining bolts, controls sys.	6405
Hyd kneelling system	6407
Pylon truss fitting beef-up	6411
Mlg Synchro XMTR push-rod	6413
Hyd filter adapter	6416
Nlg steering maniford relief valve	6418
Mlg side brace down-lock link	6420
Aft cargo door slide block and grab latch	6421
Nlg down hyd snubber	6424

	ECP No.
Hyd filter	6425
Pylon attach bolts	6426
Fwd ramp support pad position rod	6429
Wing splice W.S. 577	6430
AFt ctr cargo door act mechanism	6432
Wing splice W.S. 120	6435
Dry bay venting	6445
Inbd pylon, outbd rid back-up fitting	6446
Mlg brake link attach pin	6447
Tackle block assy, cargo winch	6450
Rerouting of gen. feeders in epu	6457
Accumulator bleedvalves, crew dr & rat	6459
Troop compt. emer. escape slide lanyard	6462
Wing fairing blkhd support beam	6466
Ctr 7 inner wing rear beam web doubler	6468
Eng. start duct support	6478
Mlg shock strut piston stop	6479
Aerial refueling receptacle	6482
Mlg wheel bearing seal	6484
Kneel cover instl fasteners	6490
Generator cooling duct	6493
Visor insulation blanked re[illegible]tion	6494
Nlg hyd motor	6495
Troop compt. latrine drain	6496
Cdpir input Emi suppression	6502
No. 1 inbd flap attachment to carriage	6505
Main frrame FS 1303 & ctr wing aux beam	6512
Inner wing fairing support	6518
Flap track torque box support fitting	6519
Flt. sta. folding door stop	6521
AFT cargo door wiring	6523
Stowage privisions for spare dru film pack and reel	6524
MLG wiring	6529
Wing doubler 7 panels W.S. 120	6536
Wing rear beam cap, T.E. strap	6537
FWD service door switch bracket	6538
FWD ramp ext toe lock mechanism	6539
Winglwr panel runout doubler	6540
HYD low press waringh switch	6541
Smoke detector update	6543
Bleed air shutoff valve wiring	6546
Bleed air ovht pylon element	6555
Mlg kneeling ball screw assy	6558
Flap pwr pack manifold assy	6559
Flap asymmetry brake	6563
Fuse chine corrosion prevention	6572
Mlg bogie pitch position	6574
Mlg kneel gearbox bearing	6576
Inner wing, mid beam web W.S. 307	6582
FWD pylon LWR side load brace	6538
NLG wheel grease seals	6591
OUTBD wind/pylon AFT mount lug spacer	6592
Inbd elev. manifold assy.	6593
Crew entry door corrosion prevention	6598
Toilet drain leakage containment	6599
Development of active LDCS	6602
Ctr wing rear beam web	6605
Stallimiter audible warn. diodes	6607
Winch locking mechanism	6611
Improved temp. aug. valve	6613
Fuel level control valvee	6614
Keel beam drain holes	6615
Temp. augmenter duct	6617
Replacement mat'l for trooop compt.	6620
Mlg normal rotation cylinder	6621
Pilot's seat	6623

	ECP No.
Aft ramp, outbd moveable logistics rail	6625
Crew galley tubing replacement	6626
Pressure aug valve servo	6627
Angle of attack XDCR	6628
Wing T.E. panels 7 support structure	6631
Visor actuator support	6632
Beef-up of madar pou solenoid spring	6633
MLG collar lock bearing	6638
MLG door attach link assy	6639
Maintenance data recorder MDR pin modifications	6641
FWD ramp blkhd splice cap	6642
AFT ramp support pad back-up struct	6646
MLG bogie roller fitting	6651
Reposition anti-ice valve	6653
FWD ramp ground support pad assy	6656
Visor actuator support structure	6657
AIL & elev. auto-pilot servo	6658
Aileron counterbalance corrosion	6660
Cooling turbine discharge switch	6661
Windshield upper/lower skin beef-up	6662
CDPIR update	6663
Wing access door seals	6666
HF/SSB couplifier filter assembly	6669
FLT deck support beams	6671
NLG trunnion bushing corrosion protection	6673
Fire fighters mask, flt. sta	6676
AFT press door hinge fitting	6685
Update of ALDCS computer	6687
NLG main drive gear box	7003
NLG shock strut press gage	7004
MLG door stirrup support pin	7005
Nacelle/pylon bleed duct seal	7007
NLG ballscrew assy replacement	7009
MLG inspection window	7010
MLG wheel brake adjuster	7015
MLG HYD sys. fuse	7016
MLG wiring	7017
AFT personnel door	7018
Cowl door vapor barrier support	7020
MLG bogie roll positioner	7022
FWD & AFT ramp lock system	7027
FWD & AFT ramp manual locks	7028
Triple ins	7031
Crew entry door and ladder	7034
Aileron quadrant guard pin	7037
Aerial refueling system	7038
MLG bogie pitch master cylinder	7039
MLG shock strut glandnut lock	7040
AFT fuse 7 EMP relocation FLT controls	7041
Rendevous radar beacon deletion	7042
ATM press regulator plumbing	7043
SKE deletion	7047
Ground proximity warn. sys. inst	7050
Pylon equipment relocation	7054
Replace ARC–109 with ARC–164 UHF radio	7059
Installation of color weather radar	7068
EBU heat shield for plumbing	7069
Improved auth-greaser for pitch trim	7074
Relief crew and troop compt. service door	7035

OTHER NECESSARY INFORMATION

Senator JACKSON. Are there any further improvements which the Air Force has previously or currently identified as necessary?

If so, give a detailed listing, including estimated costs, for incorporation into the C–5N.

Answer. The following 18 improvements are considered desirable by the Air Force for reasons of improved maintainability and/or safety:

a. Use commercial steel hydraulic lines.
b. Standardize hydraulic couplings.
c. Improve hydraulic pump.
d. Improve air turbine motor (ATM).
e. Improve corrosion protection.
f. Use one-piece latrine drain lines.
g. Use standardized waste cap.
h. Incorporate encapsulated fiberglass concept.
i. Relocate grease fittings.
j. Improve slat actuator material.
k. Install wing tip strobe lights.
l. Relocate windshield heat transformer.
m. Provide lubricating fittings.
n. Improve nitrogen dewar access.
o. Replace Crash Data Position Indicator Recorder.
p. Improve cowling door locks.
q. Improve access door hinging.
r. Include standby attitude indicator.

The costs for these items will be established during formal negotiations with Lockheed. Decisions on incorporation into the C-5B will be made after the costs are established.

COST PER C-5A OF MORE THAN $150 MILLION

Senator **Jackson**. A straightforward escalation of the costs for the C-5s procured in the fiscal year 1964 to fiscal year 1972 period into fiscal year 1982 dollars, including wing modification costs, results in a cost per C-5A of more than $150 million. This is approximately $20 million more than the fixed price bid for the C-5N when escalated to fiscal year 1982 dollars.

How can you have any confidence in the ability of the Lockheed Company to deliver aircraft at a fixed price stated in the unsolicited proposal given these facts?

What penalty would DoD be able to extract if, in negotiating a cotnract for the C-5Ns, the Lockheed Company demurred on signing a contract unless the price was adjusted for the C-5N?

What assurances can the Air Force give the Congress that the fixed price contract will be honored?

The Air Force apparently placed a great deal of reliance on the reasonableness of the C-5 unsolicited proposal, including price. Preliminary estimates by the Air Force indicate that it could cost Lockheed about $350 million or more to produce 50 C-5s than Lockheed proposes to build them for. What assurance is there that Lockheed can deliver 50 aircraft at the proposed price?

Answer. To the best of our ability to estimate the cost of 50 new C-5s, our estimate and Lockheed's proposal were within 5 percent of each other (well within the estimating error). Although the Lockheed offer appears to be a very good deal, it does not appear to be a buy-in. Based on current wing mod schedule performance, the schedule (though ambitious) appears to be achievable. The contract we will negotiate with Lockheed will be fixed price; however, it will have cost schedule visibility to allow us to monitor contract progress. The sum of these factors gives us confidence in being able to execute this buy within budget and on schedule.

DATA FOR THE B-747

Senator **Jackson**. When was the data for the B-747, as set forth in the table contained in your Congressional insert, first prepared? Specificaly, on what calendar day was that information first compiled for the table.

On what day was the other information in the table compiled?

Why wasn't the information in the table in the Ad Hoc Committee on Airlift Enhancement report?

Reference your data chart showing a comparison of KC-10, C-5, C-17 and B-747, provide backup data to support: (a) $70 million unit acquisition for B-747 and (b) $6.8 billion 20-year O&S for B-747.

Inclusive of this option for the B-747, give us the detailed justification for your cost estimates associated with unit acquisition costs, acquisition program costs, and 20-year operations and support costs.

Answer. All information in the table was developed over an extended period during 1981. The information on the B-747 was derived from the Boeing response to a 30 December 1980 Air Force request for quotation on a Wide-Bodied FAA Certified Commercial Freighter Aircraft. The price quoted for new B-747s ($58 million in fiscal year 1981 dollars) was not changed in the most recent Boeing proposal.

The difference between the $58 million (fiscal year 1981 $) Boeing quote and the $70 million (fiscal year 1981 $) Air Force estimate for unit acquisition cost results from the additional costs required for initial spares, technical data, support equipment, and program management. The $6.8 billion (fiscal year 1981 $) Air Force estimate of 20 year O&S costs for the B-747 is based on 35 primary aircraft authorizations, a 4.0 air crew manning ratio (2.0 active, 2.0 reserve), and a peacetime flying hour program adequate to maintain aircrew proficiency.

RANK ORDERING OF THE PRIORITIES IN SYSTEM ACQUISITIONS

Senator **Jackson**. Can you give us a rank ordering of the priorities of the Air Force in systems acquisitions for fiscal year 1983; specifically, where does the C-5 program rank against such other programs as the MX, B-1, ATB, F-15s, and F-16s.

Answer. The objective of Air Force program development is to produce a balanced product among competing initial needs. The MX, B-1 and a TB address strategic requirements while F-15s and F-16s address tactical requirements and the C-5 reduces airlift shortfalls. As such each is important in its own sphere and can't be compared against needs in other areas.

EXPLAIN IN DETAIL VARIATIONS OF COMPARISON

Senator **Jackson**. Please fairly represent the operational experience with regard to aircraft in current operations, based upon experience and not projections, and based on the same fiscal year dollars, or explain in detail why variations in this method of comparison are justifiable.

Answer. The OSD and AF Cost Analysis Improvement Groups have recently reevaluated the C-5B and Boeing 747 20 year Operating and Support Cost projections to insure comparability. Following is the coordinated result of the evaluation based on 1168 flying hours per PAA:

20-YEAR O. & S. COSTS

[Fiscal year 1981 dollars in billions]

	C-5B	747
Number of PAA	44	48
POL	4.0	5.1
Unit personnel	2.0	2.2
Replenishment spares	.7	.6
Depot maintenance	1.2	1.3
System support/modification	.8	.6
Total	8.7	9.8

B-747 IN COMPARISON FOR OTHER AIRLIFT AIRCRAFT

Senator **Jackson**. Your insert for the record states that, "Moreover, this aircraft does not offer a near-term option because training capability and the logistics support elements would have to be created to attain an operational capability."

Explain giving specific detail, what the training period for all aircraft crew and support personnel would entail for B-747s added to the airlift fleet.

Identify specific logistical support problems that exist.

How do these problem areas differ for the B-747 in comparison to training and support activities for other airlift aircraft?

Answer. We estimate that within a year from the delivery of the first aircraft, sufficient aircrew, organizational maintenance, and materials, handling/aerial port personnel could be trained to support organic B-747 operational activities. This estimate is based on our recent similar experience with the KC-10 (a version of the DC-10-30CF), which is basically a commercial freighter introduced into the Air Force inventory.

Within the timeframe required for personnel training, it should be possible to establish adequate Air Force B-747 spares stock levels and implement the necessary contractor logistics support arrangements. Tasks which need to be accomplished would include aircrew training to a 4.0 crew ratio, training of organizational maintenance personnel, training of material handling and aerial port personnel, implementation of MAC system support on a worldwide basis. The problems faced by incorporation of a 747 force into the Air Force inventory will be no different from those of any new aircraft. Some of the logistics tasks will be simplified due to available commercial experience. For this reason, a nine to twelve month introduction period is estimated in lieu of the normal 18 to 24 month introduction time planned for newly developed aircraft.

DOCUMENT PREPARED BY THE AD HOC AIRLIFT ENHANCEMENT COMMITTEE

Senator JACKSON. The "Department of the Air Force Airlift Enhancement Program" document prepared by the Ad Hoc Airlift Enhancement Committee shows the data and rationale supporting a major airlift procurement. Why was the document not formally concurred in by the preparers' organizations? Why is the document "not to be represented as a work" of the ad hoc committee?

ANSWER. The paper was not formally coordinated because the Ad Hoc Committee (consisting of general officers and/or Senior Executive service personnel from OSD, JCS and all Military Services) was functioning in the capacity of an advisory body to the DOD Single Manager for Airlift. It is the Secretary of the Air Force, as the Single Manager, who ultimately has the responsibility for determining and budgeting for DOD airlift enhancement requirements. The paper was promulgated on February 5, 1982, by the Secretary of the Air Force to the Deputy Secretary of Defense, the Chairman, Joint Chiefs of Staff, the Secretaries of the Army and Navy, and the Chief of Staff of the Air Force.

The purpose of the Ad Hoc Committee was to document the various considerations which were the basis of the near-term Airlift Enhancement Program decided upon by the DOD Single Manager for Airlift (the Secretary of the Air Force) in consultation with the Secretary of Defense. Because the near-term program only became possible at the very end of the fiscal year 1983 budget preparation process, not all participants and affected organizaitons were equally aware of all the factors considered. It was the purpoe of the Ad Hoc Committee to bring all of these considerations together into a single paper.

AIRLIFT SHORTFALL OF AT LEAST 40 MILLION TON MILES PER DAY

Senator JACKSON. The CMMS recommended addi-g 20 million ton miles per day airlift capability, saying further capability would provide little or no improvement in effectiveness. Why does the ad hoc committee document cite the CMMS as showing an airlift shortfall of at least 40 million ton miles per day? Give a specific reference in CMMS for this statement if one exists.

ANSWER. The CMMS recommended program of airlift, sealift and prepositioning does not satisfy the unit closure requirements. The program was preferred over larger programs because it provides the greatest improvement for a reasonable amount of investment. Therefore, the CMMS recommendation of 20 million ton miles per day (MTM/D) of airlift is not a maximum increase for airlift.

The CMMS does not conclude that additional airlift "would provide little or no improvement in effectiveness." Any additional airlift improves effectiveness. What the CMMS does state is that "beyond 15 MTM/D, incremental increases in capability produce substantially smaller benefits per dollar" for some scenarios. This happens because, as the allowable delivery time decreases, considerably more lift assets are needed earlier to show significant improvements. Since the CMMS recommendation did not meet the requirements identified, the Air Force went one step further for the least demanding scenario. To meet the full requirement of the least demanding scenario requires approximately 40 MTM/D of airlift above the 1986 baseline, and, of course, commensurate prepositioning and sealift. Therefore, the ad hoc committee reflected this as the minimum airlift shortfall, indicating that the planned procurement of 44 KC-10s and 50 C-5s reduces, but does not eliminate, the airlift deficit.

ADDITIONAL AIRLIFT MIX OF SEALIFT AND RE-POSITIONING

Senator JACKSON. According to the ad hoc committee document, the proposed additional airlift will "move us toward" the capability to deploy the Rapid Deployment Joint Task Force to Southwest Asia in 4 to 6 weeks, and then to reinforce Europe with [deleted] Army divisions and [deleted] Air Force tactical fighter squadrons in [deleted]. What additional airlift, with a mix of sealift and pre-positioning, will actually achieve such capability?

Answer. In addition to what is now the fiscal year 1983-87 program we would need enough additional airlift to reach the CMMS recommended level; additional pre-positioning in SWA for Air Force base support and Army logistics units (about 100,000 tons of materiel equivalent to about 35 MTM/D of airlift) and the additional dedicated sealift recommended in CMMS. Because we are still refining the details of support requirements in SWA, there is some uncertainty in that figure.

CARGO FLOW WITH 20 MILLION TON MILES PER DAY AIRLIFT CAPABILITY

Senator **Jackson**. The CMMS included analyses which, among other things, measured cargo flow with 20 million ton miles per day airlift capability added to a 1986 baseline. How much of the additional cargo carried was outsize for each scenario, in day-by-day increments? Were these "ton miles per day" data used to determine the recommended 10 million ton miles per day of outsize airlift capability? If not, what was used to support the recommendation?

Answer. In determining the appropriate mix of outsize/oversize cargo in the CMMS one must remember an additional 5 MTM/D of oversize/bulk capability was assumed in the 1986 baseline. Using Table 10.1 in the CMMS, a minimum of 10 MTM/D of outsize is acceptable for Scenario I. In all other scenarios at least half of the additional airlift must have outsize capability to avoid an outsize constraint. The comparison of 10 MTM/D oversize and 10 MTM/D outsize compared to 20 MTM/D of outsize shows the following scenario results in million of weighted tons reduction. I—1.5 vs 1.1; II—2.0 vs 2.7; III—1.8 vs 2.0; IV—7.2 vs 7.8. Clearly the acquisition of an outsize system that also efficiently carries bulk and oversize cargo produces the greatest benefits in cargo movement and operational flexibility.

The attached table shows, for each scenario, the outsized cargo delivered in the base case and in cases with 10, 15 and 20 MTM/D of additional outsize-capable airlift. It also shows the percent increase in delivery of outsize cargo at those levels of additional airlift. In general, we focus on the need for airlift in about the first month, since sealift would bear the brunt of movement after that time and airlift would be used to meet the unexpected demands of fluid combat situations. CMMS conclusions was based on all these data and on judgments about the minimum buy necessary to justify opening a production line. Please remember that CMMS was intended to illuminate the relationships among airlift, sealift, and prepositioning not to make fine judgments among airlift types. Furthermore, all CMMS numbers were rounded to the nearest 5 MTM/D, so 10 MTM/D of outsized could be anything between 7.5 and 12.5 MTM/D.

ADDING 13.1 MILLION TON MILES PER DAY OF ORGANIC AIRLIFT

Senator **Jackson**. The ad hoc committee recommended adding only 13.1 million ton miles per day of organic airlift to the 1986 baseline. Using CMMS methodology as in question 5, please identify the additional quantity of outsize cargo which would be moved with the lower levels of airlift enhancement.

Answer. The committee made no recommendation. It documented a decision. That decision includes C-5s, KC-10s, and CRAF Enhancement for a total of 17 MTM/D of added capability. CMMS data are not available for additions of either 13 or 17 MTM/D but these points are bracketed by points in table below:

IMPACT OF ADDITIONAL OUTSIZE-CAPABLE AIRCRAFT IN CMMS SCENARIOS

C+	Outsized cargo closed at final destination (tons)				Percent increase over baseline		
	1986 Baseline	+10 MTM/D	+15 MTM/D	+20 MTM/D	+10 MTM/D	+15 MTM/D	+20 MTM/D
Scenario I:							
5	734	972	1,094	1,273	32	49	73
10	3,506	3,569	3,799	3,961	2	8	13
15	5,810	8,276	9,162	9,749	42	58	68
30	16,140	19,238	24,615	26,379	19	53	63
45	20,600	21,154	27,369	28,731	3	33	39
60	(1)	(1)	(1)				
Scenario II:							
5	1,684	2,199	2,857	3,332	31	70	98
10	3,555	6,666	7,165	7,952	88	102	124
15	10,424	14,253	15,740	16,415	37	51	57
30	24,455	30,263	30,330	30,328	24	24	24

IMPACT OF ADDITIONAL OUTSIZE-CAPABLE AIRCRAFT IN CMMS SCENARIOS—Continued

C+	Outsized cargo closed at final destination (tons)				Percent increase over baseline		
	1986 Baseline	+10 MTM/D	+15 MTM/D	+20 MTM/D	+10 MTM/D	+15 MTM/D	+20 MTM/D
45	39,735	45,369	51,450	56,273	14	29	42
60	56,036	58,455	70,268	73,968	4	25	32
Scenario III:							
5	2,504	2,504	2,504	2,504	0	0	0
10	4,368	11,728	12,411	13,564	168	184	211
15	14,224	27,229	29,753	30,861	91	109	117
30	45,986	61,391	69,191	82,469	33	50	79
45	74,976	117,780	137,037	152,851	57	83	104
60	100,196	162,252	174,834	199,713	62	74	99
Scenario IV:							
5	998	1,005	1,109	1,187	1	11	19
10	4,207	7,234	7,905	8,803	72	88	109
15	7,433	11,006	11,334	12,007	48	52	62
30	21,731	33,304	36,714	46,335	53	69	113
45	43,377	60,439	69,792	85,740	39	61	98
60	67,561	108,026	129,619	144,568	60	92	114

[1] Deployment completed by C+45.

WHY BUY OUTSIZE AIRCRAFT IN THE NEAR-TERM

Senator JACKSON. CMMS data indicate that, when airlift enhancement is reduced from 20 million ton miles per day to 15, oversize, main airbase capability becomes more effective than out-size, austere airfield capability in near-term efforts to meet the Administration's goal. Why is Defense proposing to buy outsize aircraft in the near-term?

ANSWER. The conclusion reached by GAO and stated in this question is valid only for CMMS Scenario IV. The opposite conclusion would be drawn from the data for Scenarios II and III and no conclusion can be drawn from the results in Scenario I. (Both oversize and outsize aircraft contribute 0.9 million tons in shortfall reduction.) The CMMS recommendation was drawn from these data and judgments about the reasonable level of airlift necessary to justify opening a production line.

Hence, the CMMS data does not indicate that a reduction from 20 MTM/D to 15 MTM/D favors an oversize aircraft. In three out of four of the CMMS scenarios any such reduction favors an outsize aircraft as shown in the table below. For example, in Scenario II, two programs with the same level of total capability (15 million-ton-miles/day)—the first a commercial oversize derivative and the second, a new military outsize cargo aircraft—produce substantially different results, 0.9 and 2.3 million weighted tons of shortfall reduction respectively. Although the outsize carrier may cost more ($21B to $26B in 20 yr LCC vs $19B to $22B for the oversize carrier), the outsize aircraft would appeal to be more effective in terms of cost per unit of shortfall reduction. For most of these scenarios, the types of cargo required early are large but not dense. Iterations of various lift levels with this measure indicated that an outsize carrier providing both outsize and oversize capability is more efficient than an oversize carrier.

EXTRACT FROM TABLE 10.1 CMMS—REDUCTION IN BASELINE SHORTFALL BY SCENARIO

[Millions of weighted tons]

Airlift	I	II	III	IV
Outsize, austere airfield, capable:				
10 MTM/D	0.7	1.2	1.2	3.4
15 MTM/D	0.9	2.3	1.6	4.9
20 MTM/D	1.1	2.7	2.0	7.8

Oversize, main airbase capable:				
10 MTM/D	0.8	0.8	0.6	3.8
15 MTM/D	0.9	0.9	0.9	5.5
20 MTM/D	1.2	2.0	1.2	6.2

Note: The levels of additional airlift are in units of millions of ton miles per day. Reductions in shortfall are in units of millions of weighted tons.

In addition, DOD is not proposing to stop at the near-term increment of just 13 MTM/D but to complete the CMMS recommendation in the long term. Finally, the CMMS used 20 MTM/D of outsize, austere airfield capability in the final analysis of shortfall reduction. Except for the austere airfield capable airlifter, the costs of other alternatives in the CMMS do not reflect the intratheater movements from main airbases/sea ports or prepositioning locations to operating locations.

MC DONNELL DOUGLAS DATA C-17 VS C-5

Senator **Jackson**. The ad hoc committee document cites increased funding which was recently made available for airlift procurement. The document also contains data showing that, with this increased funding, the C-5 capability could be available earlier than that of the C-17. We understand that McDonnell-Douglas furnished data to the Air Force which projects an accelerated availability of the C-17 under a similar unconstrained funding assumption.

a. What did the McDonnell-Douglas data show on availability of the C-17 versus the C-5?

b. If the C-17 schedule can be accelerated with the increased funding made available, why is the C-5 considered the preferred choice considering the previously stated advantages attributed to the C-17?

Please provide year-by-year funding profile for the C-17 on a concurrent development schedule with cumulative deliveries through fiscal year 1989.

Answer. It has been asserted that delivery of the C-17 could occur within a year of that of the C-5. However, this schedule assumed substantial funding would be provided for an immediate start in fiscal year 1982. Considering that Congress had completely eliminated the funds requested for C-17 in FY 82, a start before fiscal year 1983 seems impossible. Further, this C-17 schedule assumed a degree of concurrency (overlapping development and production) that would have been unacceptable to the Air Force and, we think, certainly to Congress. Finally, allowance must be made for the initial training phase for the C-17 which is not required for the C-5. Given an FY 83 start for the C-17, concurrency consistent with other programs, and a normal training period, we estimate that the C-5 will be operationally available about four years earlier than the C-17.

For the reasons above, we don't believe it possible to accelerate C-17 availability to any significant degree.

REQUIREMENTS FOR 44 KC-10'S AND 50 C-5'S

Senator **Jackson**. Please provide the basis for the determination that 44 KC-10s and 50 C-5s were the required quantities of aircraft that should be included in the airlift enhancement program?

Answer. The decision was made specifically to provide a near-term reduction (not solution) to our serious intertheater shortfalls. In making the decision to increase our inventories of KC-10 and C-5 aircraft, an important consideration was business arrangement that allowed expeditious, cost-effective increases in airlift capability. Hence, the simple answer to this question is that the number of aircraft that we intend to procure in the near term was determined by favorable procurement opportunities available. We have an existing contract for KC-10 production with 44 remaining ordering options. Thus the decision was to simply buy out the current contract. Lockheed offered 50 C-5 aircraft under a proposed fixed price contractual arrangement. The company was unwilling to provide extended pricing for aircraft quantities greater than 50 on a fixed price basis. Therefore, it was decided to procure just the 50 aircraft that comprised the firm offer.

However, it is also true that, with respect to the KC-10 various studies made at the time we initiated the Advanced Tanker Cargo Aircraft procurement, demonstrated that a force of approximately 60 KC-10s will provide significant mobility enhancement through the aircraft's dual refueling and cargo carrying capabilities. Sixty KC-10s, combined with the current KC-135A and future reengined KC-135R tankers represent a flexible force mix to cover likely aerial refueling requirements.

Depending on the operational scenario, 60 KC-10s would provide the needed refueling for tactical fighter deployments and would also carry required cargo and support equipment and personnel. The KC-10s would also augment strategic airlift through both refueling of C-5/C-141 aircraft and by carrying cargo. Moreover, it can perform both cargo handling and refueling on a single mission. The 60 KC-10s would also minimize withdrawal of KC-135 aircraft from their primary SIOP support role thus reducing the operational risks to the strategic bomber force.

As regards the C-5, I suspect that the number of aircraft in the Lockheed proposal derived from the CMMS Study which recommended outsize capability equivalent to 44 C-5s—using standard AF factors, the "44" equates to about "50" in consideration of various backup aircraft requirements for attrition and maintenance float.

On the other hand, the C-5 buy will only provide 8.2MTM/day of the 10.0 MTM/day of outsize capability recommended by CMMS.

WHEN WILL DOD PRESENT A COMPREHENSIVE AIRLIFT ACQUISITION STRATEGY

Senator Jackson. The Secretary of Defense said, in December 1981, that a comprehensive airlift acquisition strategy would be presented to Congress when the decision to acquire additional airlift was made. The ad hoc committee document states that an overall long-term airlift strategy will be developed by the first quarter of fiscal year 1983. When does the Department of Defense plan to submit its overall comprehensive long-term airlift acquisition strategy to Congress?

Answer. Our comprehensive long-term airlift acquisition plan will be presented to the Congress during the fiscal year 1984 hearings which would normally take place during the second quarter of fiscal year 1983.

ASSURANCES THAT RESOURCES ARE AVAILABLE FOR C-5 DELIVERY

Senator Jackson. One of the reasons offered for selecting the C-5 was its early availability. What analyses were done by DOD or the Air Force which would confirm that the necessary personnel, facilities, tooling, and other resources are available or can be made available in time to meet the proposed delivery schedules?

Answer. Lockheed's ability to produce the C-5 was evaluated from all aspects including personnel, tooling, facilities and subcontractor availability during the C-X source selection. This complete manufacturing readiness inspection found everything adequate to pursue the program which they proposed.

LONG-TERM COST EFFECTIVENESS OF ACQUIRING TWO DIFFERENT CARGO AIRCRAFT

Senator Jackson. The earlier recommendation of the Air Force to buy C-17s would have resulted in the acquisition of only one purely cargo aircraft to meet its airlift shortfall. Rationale supporting the decision to acquire C-5s indicates the Air Force still wants and needs a C-17 type aircraft. Was the long-term cost effectiveness of acquiring two different cargo aircraft rather than one considered in the recent airlift enhancement decision?

Answer. The long-term effectiveness of buying a mix of C-5s and C-17s is not appreciably different from buying on C-17s, since the long-term strategy has always included continued use of the currently owned C-5As. To that end, the Air Force is insisting that the new C-5s be as much like the C-5As as possible. By changing the ultimate force mix to include a greater number of C-5s, more outsize capability can be gained sooner, without an adverse impact on overall force supportability.

MORE THAN ONE CONTRACTOR IN C-17 ONGOING R & D PROGRAM

Senator Jackson. Does the Department of Defense plan to involve more than one contractor in the C-17 ongoing R&D program so that future procurement would result from a competitive bidding, or does the Department of Defense plan a single contractor with sole source procurement at the date of actual procurement?

Does the Air Force plan to acquire the C-17 on a sole source basis in the future? If it does, what is the basis and what are the advantages/disadvantages of doing so? Why is a low level C-17 R&D effort necessary now? Why couldn't this be done if and when it is decided to acquire the C-17?

Answer. The C-17 design was selected in a formal technical competition. No need for further competition exists. By starting a low-level R & D program structured to allow decisions on further development and production, the need for a crash program later in the 1980s to provide candidates for airlift force modernization is avoided. This program will also provide competition in outsize cargo capability with the

C-5 program. Should requirements change then a new competition could be pursued using technology advancements developed under this low-level C-17 program.

[Whereupon, at 3:26 p.m., the subcommittee adjourned, to reconvene subject to the call of the Chair.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

MONDAY, MARCH 22, 1982

U.S. SENATE,
SUBCOMMITTEE ON SEA POWER AND FORCE PROJECTION,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

ANTISUBMARINE WARFARE PROGRAMS

The subcommittee met in open session, pursuant to notice, at 10:05 a.m. in room 212, Russell Senate Office Building, Senator William S. Cohen, chairman presiding.

Present: Senators Cohen and Byrd.

Staff present: Francis J. Sullivan, minority staff director; L. Wayne Arny III and Patrick L. Renehan, professional staff members; Mark B. Robinson, research assistant; and Kathleen L. McGuire, staff assistant.

Also present: George Kohl, assistant to Senator Humphrey; Jim Dykstra, assistant to Senator Cohen; and Gray Armistead, assistant to Senator Byrd.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator COHEN. The subcommittee will come to order.

This morning I have the pleasure of welcoming Vice Adm. Nils Thunman, the Deputy Chief of Naval Operations for Submarine Warfare, Vice Admiral McDonald, the Deputy Chief of Naval Operations for Air Warfare, and Vice Adm. Robert Walters, Deputy Chief of Naval Operations for Surface Warfare. They will discuss the Navy's research and procurement programs that fall under the antisubmarine warfare mission area.

Admiral Walters will present a summary of the ASW threat facing the Navy and a broad overview of the Navy's response to that threat. He will then specifically address the surface ASW programs. Admiral Thunman will then cover the submarine programs and Admiral McDonald will discuss air ASW. I assume this has all been cleared by staff.

Admiral Walters will have a few comments on the other procurement; Navy, account that comes under our jurisdiction.

As is the subcommittee's policy, this hearing is structured along warfare mission lines, and consequently the programs we are reviewing today include not only shipbuilding, but aircraft, weapons, and other procurement, and research and development.

I have also requested the witnesses to be prepared not only to respond to our questions but also to cover the following specfic areas: Submarine procurement, including diesel-electric submarines in response to the committee's request of last year; procurement of LAMPS III ASW helicopter and the P-3C maritime patrol aircraft; torpedo programs, including the advanced lightweight torpedo and the Mark-48 advanced capability torpedo; ASW systems, including the SQS-53C and the submarine advanced combat system; ASW rocket weapons; and ASW ship platforms.

I want to thank all of you for adjusting your schedule at the last minute and for adjusting psychologically to our format this year. The mission warfare orientation I think has been very helpful to me and the other members of the committee, even though I realize that it has been somewhat of a burden on you in terms of scheduling.

We are seeing Admiral Thunman for the first time today, but we have seen Admiral McDonald twice and this is Admiral Walter's fourth visit. I am not sure, Senator Byrd, whether this represents a direct or inverse relationship to their relative positions in the great scheme of naval warfare. I think I will have to reserve that subject matter for a later hearing, perhaps a series of hearings.

But before we begin, I would like to turn to Senator Byrd for any opening statement that he might have.

Senator **Byrd**. Thank you but not at this time.

Senator **Cohen**. As is our custom, we will try to proceed on the basis of keeping the hearing open. If at any time you think that any question I or Senator Byrd might ask requires a classified answer, or if you think that in the course of your presentation that we must go into executive session, please let me know. Otherwise, we will proceed on the basis that the meeting is open.

Admiral Walters.

STATEMENT OF VICE ADM. ROBERT L. WALTERS, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (SURFACE WARFARE), ACCOMPANIED BY GERALD A. CANN, PRINCIPAL DEPUTY ASSISTANT SECRETARY OF THE NAVY (R.E. & S.); VICE ADM. R. R. MONROE, DIRECTOR, RESEARCH, DEVELOPMENT, TEST AND EVALUATION DIVISION; AND VICE ADM. E. B. FOWLER, COMMANDER, NAVAL SEA SYSTEMS COMMAND

Admiral **Walters**. Yes, sir.

I have a prepared statement for entry into the record, with your permission, which includes the OPN appropriation items that affect ASW.

Principally, I want to discuss two elements of the Navy ASW program; the undersea surveillance system and surface antisubmarine forces. As you mentioned, Admiral Thunman will cover the submarine portion and Admiral McDonald the air portion.

As we have discussed during previous testimony, the Soviet navy has made significant improvements in all areas. The submarine remains the most important element in the Soviet fleet, both in their view and from our perspective as well. The ability to neutralize and destroy this formidable force is critical to our strategy of maritime superiority and control of vital sea areas.

Last week I spoke to you about the continuing advances in Soviet air and surface warfighting capability, and the advances and trends that we see in the submarine area are no less impressive. The Soviets view their submarines as an offensive force which they would intend to use to control key sea areas by opposing enemy forces and shipping.

A total of 20 submarine classes or modifications have been built since the 1960's, with dramatic progress in the last 3 years. The Soviets have progressively upgraded the qualitative aspects of their submarine force, and it is imperative that our antisubmarine capabilities move forward to meet this increasing threat.

Our tactical concepts as to how best to conduct the antisubmarine warfare mission have evolved with improvements in our platforms, as well as the sensors to meet this changing threat. We intend to defeat the Soviet submarine force in three distinct types of operations. The VP and SSN units will be deployed in forward barriers and will attempt to interdict submarines transiting to and from assigned patrol areas. VP and SSN units will also be utilized in open ocean operations against those enemy submarines that are engaged in antishipping operations or the disruption of our sea lines of communications.

Finally, naval forces and convoys would be defended by local antisubmarine warfare forces operating within approximately 300 nautical miles of the defended unit. These local forces consist of surface ships, aircraft, and submarines operating as a closely coordinated group.

The integrated undersea surveillance system is composed of three separate and complementary systems, one being the sound surveillance system, with which you are familiar; a second being the surveillance towed array sensor, called SURTASS, which has been previously budgeted in prior years; and finally the rapidly deployable surveillance system, called RDSS. SOSUS has been in operation since the late 1950's. SURTASS is currently in production with initial delivery scheduled for calendar year 1983. SURTASS consists of a passive acoustic surveillance array, with capabilities similar to the SOSUS arrays, but in this case would be towed by a small, unarmed civilian-manned ship called T-AGOS. The first 12 SURTASS units were authorized from 1979 to 1982. The Navy is now seeking an additional six SURTASS units in the 5-year defense plan, and these next six ships would be in the form of a small waterplane area twin hull or SWATH concept.

The RDSS is an air deployable, bottom moored, long life passive acoustic surveillance buoy. The basic RDSS design features data transmission to existing maritime patrol aircraft with either a real-time readout or the use of a data storage capability. RDSS will also perform well in shallow water and in areas that are unsuitable for either SOSUS or SURTASS. RDSS entered full-scale development in August 1981.

Our plan then is to continue to develop and improve the integrated undersea surveillance systems over the years. Specifically it includes modernizing the SOSUS undersea and shore-based components; deploying SURTASS with the T-AGOS to areas of interest; and finally, to complete the development of RDSS.

Surface forces are a key element in the conduct of local ASW operations. These operations are characterized by short reaction time and the coordinated employment of ASW platforms and sensors of all kinds. Many of our surface platforms are specifically designed for and well suited to this tasking.

The principal elements of the surface ASW forces are the DD 963, the CG 47, although that is a collateral mission with AAW in CG-47, the DDG 51 and finally the frigates. The DD 963 class undoubtedly remains our foremost ASW ship today. The ship is quiet and is also a superior helicopter and weapons platform. It is presently fitted with an SQS-53 series active sonar and carries LAMPS MK 1.

In the 1986 to 1990 timeframe, the 31 ships of the DD 963 class will be upgraded with the addition of the SQR-19 TACTAS and an improvement to the 53 sonar, plus LAMPS MK III to replace LAMPS MK 1, and an ASW control system, which will perform data-handling and fire control functions in a manner we are not able to do today. Also commencing in 1986, ships of this class will receive the vertical launch system, which in addition to giving them an offensive capability for Tomahawk, will provide a vertical launch system to handle a stand-off ASN weapon replacement for ASROC. The required active sonar improvements will be implemented with the installation of the SQS-53 Charlie sonar, which you have expressed an interest in. These improvements would occur in the 1986 to 1990 time period.

In the battle force, the DD 963 will be asssigned duties as an outer screen element. It will utilize the TACTAS array to trigger the LAMPS III as its localizer and weapons carrier to prosecute the contact.

The CG 47, the DDG 993's and the DDG 51's probably would be used in the inner screen elements of the battle forces. They would play a leading role in conducting closein ASW. These units will operate and coordinate LAMPS MK III and other ASW air assets in the carrier airwing in providing the means to counter torpedo and short range submarine-launched cruise missiles. These ships will be well equipped for this task, as they have the same ASW Suite as the DD 963, and will in due time also receive TACTAS, improvements to the 53 sonar, LAMPS MK III, the vertical launch system, and the ASW combat system.

For convoys, amphibious forces or underway replenishment groups, we rely upon our frigate force, primarily the FF-1052 and the FFG-7 classes. The 1052-class frigate is a superior ASW platform, which will be an asset well into the mid-1990's. It is relatively quiet and we are making it even quieter as we find ways to do that. We are adding new passive sensors, such as the SQR-18 tactical towed array sonar. By the mid 1980's all of the frigates will have either the current TACTAS, SQR-18, or the follow on the SQR-18A.

Our 5-year surface ASW plan provides for a balanced mix of sensor and weapons improvements, and is structured to meet the following objectives: First, to improve the passive detection and localization capabilities of our forces; second, to improve active sonar detection performance; third, to improve fire control and data handling capabilities for better coordination and processing of both active and passive data; fourth to improve ASW helicopter performance; and finally, to improve our ability to kill enemy submarines with improved lightweight torpedoes.

In support of this plan, the fiscal year 1983 budget requests completion of the development and the commencement of procurement of the LAMPS MK III, and in that respect I would like to show about three or four quick slides on the LAMPS MK III which will give you an indication of the kind of capability that we are building into our ships.

This is the LAMPS MK III helicopter. It represents a significant increase in our capability over LAMPS I from the standpoint of range, speed, endurance time on station, and weapons-carrying capability, as well as improved processing of the information we get from the onboard sensors.

We have designed the ships to have a recovery system called RAST, and the reason is that LAMPS must be able to operate in heavy seas. RAST permits a positive hauling down of the helicopter to the deck and permits us to move the helicopter in and out of the hanger from the landing area.

This picture [deleted] and the one to follow show the kinds of seas that the ship in which the opeval in *McInerny* was done. They operated LAMPS on the day these pictures were taken, a state 5 or 6 sea.

That shows the helicopter on deck. I thought maybe the cameraman was off, but the horizon is on the level. It shows quite a roll of the ship with the helicopter secured to the deck.

The second part of the LAMPS program is to continue the procurement of LAMPS MK I. We have several ships that have a LAMPS MK I capability and they will retain that capability as we have no plans to replace it with LAMPS MK III.

We want to continue the development and begin procurement of the SQR-19 TACTAS. The SQR-19 represents a significant development in the ASW field. When we field that sensor in the fleet, we will have realized a capability in long-range detection we have never before had.

We also want to continue improvements in our active sonars because they give us the capability to offset the developments in the passive area.

We need to continue the development of the ASW control system because with all the sensor improvements that we have, the handling of data and being able to process a contact in distant areas requires computer assistance. We are developing this improvement in the ASW combat system.

We need to continue the development of the advanced lightweight torpedo because it is the torpedo which will serve both surface ships and all of our ASW aircraft. It is being designed to meet the future threat.

For now we need to continue to procure the MK 46 MOD 5, the NEARTIP torpedo, which will remain our primary means of killing submarines for surface and air platforms until the ALWT is developed.

A new effort into which we are putting increased emphasis is surface ship torpedo defense. It is to develop the means to detect, classify, and defeat enemy torpedoes. It is a small effort now but I anticipate that this will grow as we learn more about what we need to do.

And finally, we need to continue to develop and procure silencing improvements for all of our ASW platforms.

All of these programs are discussed in detail in the classified section of my prepared statement. That completes my oral statement, Mr. Chairman.

Senator Cohen. Thank you very much, Admiral Walters.

Admiral Thunman?

STATEMENT OF VICE ADM. N. R. THUNMAN, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (SUBMARINE WARFARE)

Admiral Thunman. With your permission, I will also submit my statement for the record and summarize highlights.

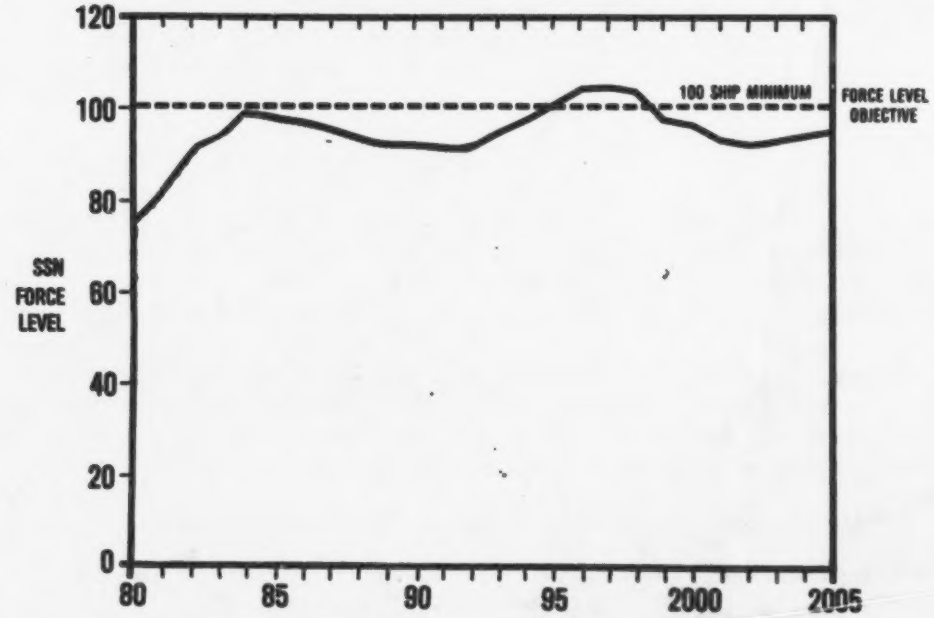
The Chief of Naval Operations has established a midrange goal of 100 multimission nuclear attack submarines. These submarines must be capable of conducting independent offensive operations deep in enemy waters against surface ships, submarines, and now with the advent of the Tomahawk cruise missile, against land targets. They must be ready to form barriers at any choke point to prevent access of enemy submarines and surface ships to the open sea.

They must be capable of providing antisubmarine warfare and antisurface ship warfare support to our carrier battle groups. They must be ready to conduct open ocean antisubmarine warfare, to hold open the sea lanes vital to our interests. They must be able to conduct special covert operations, such as mining, surveillance, reconnaissance, and special warfare, which includes the landing of swimmers ashore. And finally, they must be able to exploit locating intelligence, such as that provided by the SOSUS system, as Admiral Walters described it.

Our midrange goal of 100 nuclear powered attack submarines is the minimum necessary to meet the increasing Soviet threat, which as you know consists of 657 warships and 375 submarines. In establishing this goal, we considered our qualitative versus their quantitative superiority, and of course, affordability, which is a key issue. We believe that the 17 nuclear powered attack submarines in this year's 5-year defense plan is an affordable plan.

Our current building program is centered on the construction of the *Los Angeles* class or 688 class submarine. Of the 39 previously authorized, 18 have been delivered, and we expect delivery of 3 more this year. Considering the 17 requested in the 5-year defense plan, our current goal is to build 56 of this class.

NUCLEAR ATTACK SUBMARINE FORCE LEVELS



This graph shows today's force level and projects it out to about the year 2005. We currently have 88 nuclear attack submarines. We will build to 99 in 1984, and at the end of this year's 5-year defense plan, 1987, we will have 95. That assumes 17 deliveries and 10 retirements. Assuming a building rate of 10 every 3 years and a 30-year ship lifetime, we expect to reach our midrange goal of 100 in 1995.

We continue to study diesel electric submarines as an alternative to the nuclear attack submarine. Clearly, they are not as capable. They do not have the speed, endurance, survivability, fire power, or the combat systems capability of our nuclear attack submarines. They are only useful in barrier operations, and then only when not opposed by antisubmarine warfare aircraft or an undersea surveillance system, or in areas where there is no ice. And this assumes that the diesel electric submarine would be forward-based, close to the area where we would want to execute the barrier.

I would point out that the allies have some 150 diesel electric submarines, most well suited to barrier operations close to their shores, and in any conflict, we would rely heavily on them to provide that capability.

I would like to briefly discuss some of the major research and development initiatives involving the antisubmarine warfare capability of our submarine force. First, we must develop weapons to destroy the threat. The MK 48 advanced capability torpedo, or ADCAP as we call it, is a prime example. We need the ADCAP to counter the Soviet's faster, deeper diving submarines in all environments, including shallow water and under the ice.

We need a standoff weapon to kill their high-speed submarines at long ranges, and we are working to develop a common antisubmarine warfare standoff weapon to carry out this mission. It will be a follow-on to our SUBROC weapon, which must be retired in the nineties.

The vertical launch system, going into the 688 class submarine, provides us increased firepower, not only to shoot the Tomahawk cruise missile, but to fire the combined antisubmarine warfare standoff weapon.

We need an improved combat system and, as a consequence, we are developing the submarine advanced combat system or SUBACS, as we call it. It is a new system to integrate all combat systems through a common data bus. It combines fire control with new sonar sensors. It supports our new weapons systems. It gives us the flexibility and the combat capability needed for the 21st century.

In summary, I would say that our attack submarines are the best in the world. They are spread thinly. We need to maintain our technological superiority. We need your support of the 100 nuclear attack submarine midrange goal. I will pass now to Admiral McDonald.

[The prepared statement of Admiral Thunman follows:]

PREPARED STATEMENT OF VICE ADM. N. R. THUNMAN, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS FOR SUBMARINE WARFARE

In his report on the fiscal year 1983 military posture and budget the Chief of Naval Operations described the key elements we must build in our Navy to regain naval superiority. As the CNO's deputy for submarine warfare, I will focus today on our attack submarine programs which will lead to this objective.

Our attack submarines are designed to aggressively seek out and destroy enemy submarines and surface ships across a wide spectrum of tactical scenarios, working both independently and in consort with a battle group or other submarines. The stealth, endurance, survivability, and extraordinary capabilities of these submarines make them a major deterrent to war and will make them a significant contributor to victory should deterrence fail.

ATTACK SUBMARINE PROGRAM

The CNO has established a mid-range force level goal of 100 multi-purpose, nuclear-powered attack submarines. This force level is based on the clear-cut premise that from the start of any war with the Soviets, we must have sufficient attack submarines to deploy immediately to forward areas and execute any of the following missions:

Penetrate deeply into hostile seas to conduct sustained independent operations against enemy submarines and surface forces and, with the introduction of the cruise missile, to attack land targets;

Form choke-point barriers to intercept opposing submarines and surface ships and deny them access to the open seas;

Operate in direct support of carrier battle groups, amphibious task forces and convoys against both submarine and surface threats;

Conduct broad ocean search and sanitization to detect and destroy enemy submarines threatening sea lines of communication;

Conduct covert special missions such as mining, surveillance, reconnaissance and landing special warfare teams behind enemy lines; and

Exploit locating intelligence to intercept, engage and destroy enemy surface and subsurface units operating in or transiting areas of strategic importance.

In carrying out these varied tasks, attack submarines must perform equally well in open oceans, in restricted waters, in deep or shallow areas, in the warm waters of the tropics or under the ice in arctic regions. The field of engagement for these submarines will often be in areas that are well beyond friendly support and heavily defended in depth by hostile air, surface and subsurface ASW forces. As the war progresses, some submarines will be required to shift roles frequently—all must be capable of repositioning quickly and changing offensive assignments without logistic support.

The current mid-range goal of 100 is limited by affordability, and was selected as minimally acceptable while in balance with other essential naval needs.

In support of our goal, seventeen attack submarines of the Los Angeles (SSN 688) class are included in the new construction program of the current five year defense plan. There are presently nineteen 688's under construction, and two more, those authorized in 1982, are in contract negotiations. In 1981, seven 688's were delivered to the fleet and we expect delivery of four more this calendar year.

Today our nuclear attack submarine force consists of:

Eighteen 688 class;
Thirty-nine 637 class;
Thirteen 594 class;
Eight 598/608 SSNs that formerly served as SSBNs, and
Ten pre-594 class.

This provides a total force of 88 SSNs. When we reach the end of the current five year defense plan in fiscal year 1987 (projecting 17 deliveries and 10 retirements), we will have 95 nuclear attack submarines.

The cost, and therefore the ultimate affordability of new construction attack submarines is of great concern. This has led us to continue to explore ways to achieve commensurate effectiveness for less capital investment. Unfortunately, I must report that our efforts have not been successful. Given the expanding role of attack submarines and the lifespan of either the submarines we now have or those we can build, there is no apparent cost effective alternative for the multi-mission nuclear attack submarine.

Nevertheless, we continue to explore ways to reduce costs and, to that end, construction of diesel submarines as a less expensive alternative is now being studied. Diesel submarines cannot match the capabilities of the modern nuclear attack submarine in any major category (e.g., speed, endurance, survivability, fire power, combat systems suite) and they would only be useful in the limited role of choke point barrier operations if they could be forward based and employed in an area which is both free of ice and where they are unopposed by an intensive ASW aircraft and under-sea surveillance threat. When the possibility of forward basing is examined, it becomes clear that if submarines are permitted to operate from overseas allied bases in time of war, then our allies would also be participants in that war. Therefore, their diesel submarine forces would be available for deployment in the execution of those barrier operations within their capabilities. In this connection, the NATO countries, and our other allies who are close to the choke points at issue, have a combined total of over 150 diesel submarines, most of which are well suited for barrier operations.

Best Available C

Our allies continue to build diesel submarines because they are ideally situated geographically to employ them; conversely, our forward strategy which emphasizes flexibility, mobility, simultaneity and offensive combat on a global basis dictates that we build nuclear attack submarines to meet the threat.

RESEARCH AND DEVELOPMENT PROGRAMS

We have for some time cited U.S. technological superiority as the basis for our confidence in our ability to wage submarine warfare successfully against adversaries who have significant numerical superiority. Advancements in technology are grounded solely in our research and development efforts, and in light of the ominous size and improving quality of the Soviet Navy—especially their submarine force—these research and development programs are of critical importance. Your continued strong support in this area is vital.

Before I discuss specific research and development programs, I want to review for you the objectives against which all of our R&D efforts are structured and evaluated. First, we looked closely at the intelligence command's evaluation of Soviet trends and future operations. After comparing these developments with our current and projected capabilities, certain clear-cut objectives emerged. We must:

Retain the acoustic advantage;

Acquire weapons capable of destroying the threat; and

Retain the ability to counter the threat in any theatre.

We must pursue these objectives through improvements in the capabilities of the 688 class submarine and, at the same time, we must develop new technologies which enhance our capability but which cannot be included in the 688 class submarine and which may require the design of a new submarine at some time in the future.

Now I would like to focus on the specific major development programs which support our objectives. The addition of new complex weapons to the submarine has expanded the requirements placed upon our fire control and combat systems. Additionally, the requirement to provide over-the-horizon targeting in the employment of the Tomahawk cruise missile has exceeded the capacity of current combat control systems. These current systems are being modified to meet the requirements, but even with modification little or no growth margin remains. Thus, based on a top down engineering analysis of projected combat systems requirements, a new system, the submarine advanced combat system (SUBACS), is now being developed. This system, together with improved sensors, will significantly upgrade our combat capability and provide needed room for growth requirements into the 21st century.

The programs which contribute to maintaining acoustic advantages can be separated into 3 categories: (1) those programs designed to correct current acoustic shortfalls; (2) mid to long term sonar development to improve sonar sensitivity and (3) programs designed to maintain the combat capability of the SSN 637 class through the end of its service life.

Development efforts to correct current acoustic shortfalls include programs to correct AN/BQQ-5 hull array design deficiencies, provide for expanded signal processing capabilities with the development of the AN/BQQ-5(C), and improve detection capabilities with the addition of the towed array.

Mid to long term developments to improved sonar sensitivity involve two major R&D programs: Development of a wide aperture array (WAA) and (2) development of an advanced conformal submarine acoustic system (ASCAS). The wide aperture array is expected to provide a significant improvement in sensitivity, can provide rapid localization of targets and can be either fitted into new ships or backfitted into existing SSN 688 class ships. The advanced conformal sonar acoustic system (ACSAS) will marry naval architecture and acoustic design requirements into a mutually beneficial ship configuration. It is expected that the resulting improvement in sensitivity will improve detection ranges by about a factor of ten. ACSAS will not be adaptable to backfit into the 688 class submarine and will require a new design hull. Both of these systems (WAA and ACSAS) will be designed to be an integral subsystem of the overall submarine advanced combat systems (SUBACS).

During their last 10 to 15 years of service life the SSN 637 class ships must also be provided an improved sonar sensitivity as the threat grows quieter. We are developing an advanced towed array which will provide the required improvement. This sensitivity gain, combined with a rapid ranging technique provided by software algorithem changes will ensure that the SSN 637 class will remain a front line ASW capable attack submarine throughout its service life.

The submarine weapons developments provide for the introduction of an advanced capability submarine heavyweight torpedo (MK-48 ADCAP), and an ASW standoff weapon designed to be used by both submarines and by surface ships. We have also developed a family of submarine and surface ship launched cruise missiles. The addition of 12 vertical cruise missile launchers to the SSN 688 class will significantly increase the fire power of that class submarine. These tubes, which can be installed without penalty in speed, quiet operation, or ASW capability, will be capable of launching either the ASW standoff weapon or any of the family of land-attack and ship-attack Tomahawk cruise missiles. We plan to install these tubes in all new construction SSNs and backfit them into existing 688 class submarines during scheduled overhaul periods.

The present MK 48 torpedo is the best heavyweight torpedo in the world. Nevertheless, the evolution of the threat beyond for that which the MK 48 torpedo was designed has steadily reduced its effectiveness. The MK 48 ADCAP torpedo provides a modification that will significantly improve the MK 48 weapon's performance, thus giving it the same or better capability against the threat of the 1990's as the original MK 48 had against the threat of the early 1970's. The MK 48 ADCAP will provide major improvements against the threat and in adverse environments.

An ADCAP modified MK 48 torpedo will utilize the existing torpedo afterbody/tailcone and warhead sections. A new guidance and control (G&C) unit utilizing advanced digital electronics will replace the base and control sections. Taking advantage of the smaller size of the new G&C section, the fuel tank will be replaced with a larger version. The propulsion system is also being upgraded to meet the threat. The upgraded propulsion system will utilize the existing engine with minor modifications. The electrical power source or alternator is being replaced with a new unit to satisfy the power requirements of the new sonar and G&C electronics. Minor modifications are being incorporated into the afterbody/tailcone section to improve torpedo steering and handling at increased depths and higher speeds.

The ability to vastly improve the MK 48 torpedo capabilities while maintaining the same torpedo shape is principally due to the exploitation of advanced digital signal processing and logic technology. Additionally, a compact new high powered sonar which employs multiple beams and complex pulses together with greatly reduced array self-noise will improve the acoustic performance of the torpedo.

The MK 48 ADCAP program has undergone an extensive restructuring effort since August 1981 in order to fix program costs and schedules. The following summarizes the actions taken to control this program:

Key management (Navy and contractor) personnel have been replaced and augmented;

The naval sea systems command (NAVSEA) ADCAP xrogram office has been restructured and expanded;

The supporting Navy laboratories have been restructured to support NAVSEA; and

The technical baseline has been defined and options have been evaluated.

The MK 48 restructuring effort included a work breakdown structure analysis to accurately determine the program schedule and costs. This process has established a well-defined, executable program in which we have a high degree of confidence. The derived costs have been based on a program that has been restructured to reduce costs, schedule, and technical risks.

The ADCAP modification is urgently needed to upgrade fleet capability to meet the existing and growing threat.

The common ASW standoff weapon (CASW/SOW) will provide submarines and surface ships with an effective standoff capability to place a nuclear or conventional payload in position to destroy enemy submarines at long ranges.

The ASW standoff weapon program began in fiscal year 1980. Concept formulation study contracts were awarded to four competitors: General Dynamics Convair Division, Goodyear Aerospace Corporation, McDonnell Douglas Aerospace Corporation St. Louis Division, and Boeing/Gould. After a thorough Navy source selection evaluation, the Boeing/Gould team was awarded a sustaining contract. In October 1981 the program was restructured to include a surface ship launch capability and the program was renamed the common ASW standoff weapon.

The CASW/SOW provides an effective attack and kill capability against the projected (post-1985) threat at ranges that match our projected detection and localization capabilities. Presently, submarine kill capability reasonably matches submarine ASW targeting through the employment of the MK 48 torpedo (short/intermediate ranges) and subroc (standoff ranges). The subroc will be retired in the late 1980's because it is obsolete and unsupportable.

The passive detection capability of the threat platforms will continue to improve. This factor dictates that one of our prime objectives must be the reduction of self and radiated noise. To this end we have supported development efforts and production improvements to reduce the radiated noise of our ships.

In addition to the major programs which support the objectives I stated earlier, there are several essential programs which I term support programs. These are vital to continued submarine development and improvement and are deserving of mention at this time.

ATTACK SUBMARINE DEVELOPMENT

This supporting program provides funds for: The design of 688 class improvements; and the development of advanced technology to support a new design submarine some time in the future.

This project is the only project available to provide basic platform improvement.

SUBMARINE SHOCK PROGRAM

This is an ongoing program structured to define and correct deficiencies which reduce reliability of submarine equipments when subjected to shock loading.

IMPROVED PERFORMANCE MACHINERY

This program develops non-nuclear propulsion system components with improved power to weight performance over existing propulsion equipments. As much as 40 percent weight savings and significant size reduction can be accomplished by applying existing technology to such components as propulsion turbines, reduction gears, turbine generators, sea water systems, foundations and sound isolation systems. Since the volume and weight of a submarine are constrained by hydrodynamic and hydrostatic design parameters such weight and size savings translate into smaller, faster submarines or increased capacity for combat system improvements.

IMPROVED SSN 688 CAPABILITY FOR OPERATIONS IN ARCTIC REGIONS

There are significant areas of concern in our ability to effectively and consistently conduct ASW in the Arctic regions. Therefore, we are investigating ways to improve the Arctic warfare capabilities of the SSN 688 class ship, its sensors, and its weapons. We are further investigating the characteristics required of an SSN to be Arctic capable.

COUNTERMEASURES

Increasingly sophisticated Soviet weapons and sensors require that we upgrade our anti-sonar and anti-torpedo countermeasures. We are developing countermeasures that will be effective in today's environment.

In summary, the overall submarine R&D effort is an interrelated, objective oriented program. The combined value of these initiatives, as they fit into the integrated program, is far greater than the sum of the individual program costs. By developing this type of approach we can be assured that the most effective submarine will be available both now and in the future.

The modern nuclear attack submarine remains the most capable anti-submarine warfare and anti-surface warfare weapon system in the fleet. At the outbreak of hostilities it can move quickly into forward areas to exploit weaknesses and pave the way for other forces. Its deterrence value now is as great as its value in wartime should deterrence fail—it is a vital member of the 600 ship Navy. I will now address briefly a matter that concerns both attack submarines and strategic submarines.

SUBMARINE DISPOSAL

As our submarines reach the end of their useful service life they are inactivated and placed in temporary waterborne storage. Only four ships are in this status today with a fifth, the Nautilus, being prepared as a national monument. Eventually some means of permanent disposal will be required for even our newest submarines being built today. When a submarine is inactivated, the vast majority of the radioactive material in the propulsion plant is taken out when the nuclear fuel is removed for recycling; however, some radioactivity remains from the irradiation of part of the plant structure and its piping systems. The quantity and type of radioactivity remaining is low level radioactive waste. The National Environmental Policy Act requires that prior to a decision on the manner of disposal to be employed all reasonable alternatives must be considered. Accordingly, the Navy has recently filed a notice of intent to prepare an environmental impact statement for disposal of decommissioned, defueled submarines.

We are preparing this statement years in advance of any requirement to dispose of a submarine so that consideration of the alternatives can be made in a deliberate, thorough, and comprehensive manner. In looking at all methods of disposal, both sea and land burial will be studied.

I can assure you that in carrying out any disposal actions in the future, the Navy will take no actions that would adversely affect our oceans, the environment or the health and safety of people in our country or abroad.

READINESS AND SUSTAINABILITY

Important to any discussion of our attack submarines are the current fleet standards of sustainability and readiness. Sustainability considerations include the availability of repair parts and replenishment stocks as they relate to our ability to conduct extended combat operations at sea. Readiness in this context refers to the material condition of our ships and the state of personnel manning and training in our submarine crews.

In general, trends in both of these key areas are improving. Our submarines are maintained fully capable of extended operations at sea well beyond the expected length of wartime partrols. Some areas of concern exist, however, regarding our ability to rearm and replenish these ships in certain scenarios. Programs to correct these deficiencies have been addressed in the current budget.

The submarine force has always emphasized high standards of readiness. We have recently implemented a performance monitoring system for the SSN 637 and SSN 688 classes that will permit us to extend the intervals between overhauls without sacrificing material readiness. This monitoring program is similar to the program that has been so successful for our strategic submarines. It will permit us to minimize operating time lost during overhaul periods while methodically identifying and correcting equipment deficiencies before failures occur. These monitoring programs have also proven effective in eliminating unnecessary routine performance checks and in reducing repair parts usage.

SUBMARINE FORCE PERSONNEL STATUS

A key element in attaining combat readiness is our ability to man submarines with the necessary quantity and quality of officers and enlisted personnel. Submarine personnel shortages have existed for many years but I am pleased to report that we have made encouraging gains recently.

We have observed increases in accessions as well as improvements in both officer and enlisted retention. For the past two years we have accessed the highest numbers of officers into the nuclear submarine program in history. The overall shortage of nuclear submarine officers is decreasing by about 100 per year. The enlisted recruiters have met their goal for nuclear field personnel every month since June of 1980.

Retention of submarine officers has also increased. We had projected only 28 percent retention in fiscal year 1981 but attained 33 percent. It now appears that we will reach 37 percent retention this year. Additionally, eleven officers have elected to return to active duty from civilian life since January 1981 as compared to only one the previous year. We have also seen 23 percent fewer officers submit their resignations this year than the previous year.

Enlisted retention has likewise taken an upswing. One year ago we had only 70 percent of the supervisory billets in submarines manned by the required senior petty officers and chief petty officers. Today we are filling 84 percent of these billets with the required seniority. First term, second term and career reenlistments have all improved over this past year and more senior enlisted personnel are volunteering for submarine sea duty than ever before.

These positive trends in manning and experience levels are due partially to improved management and navy initiatives; however, in my view, the greatest impetus has been the support by the Congress of personnel programs, particularly the pay and benefit improvements which have been enacted.

Notwithstanding these positive trends, troublesome problems remain. We are keeping the submarines fully manned and mission capable, but only at the sacrifice of reasonable shore rotation and shore manning. Past years of accession shortages and inadequate retention are not easily overcome.

In the case of officers, we man the submarines fully by assigning 79 percent of our commanders and junior to submarine sea duty. The average submarine officer spends 14 of his first 20 years of service on submarine sea duty. While this is a great improvement over the days when we commonly had 16 to 18 years of submarine sea duty, it is well below our goal of having a ratio of 11 years assigned to submarine sea duty and 9 years of shore and staff tours. The overall shortage of mid-grade officers who serve as senior department heads has also resulted in a lowering of experience levels. Only 65 percent of these billets are being manned now by officers of the seniority and experience level we desire.

In the enlisted area, the attainment of 84 percent senior petty officer manning, while much improved, is still far from optimum. The recent gain in our inventory of these personnel returns us to the level existing at the end of 1978 in spite of an increase in submarine at sea requirements. As with the officer corps, we sacrifice reasonable enlisted shore rotation to keep the submarines combat ready. Most of our key ratings, including nuclear trained personnel, have sea to shore duty ratios of 5 years to 2 years. This is not a desirable situation and is a tough burden for the senior personnel with families. The only solution to these shortages is to continue the gains in retention which we have seen this past year. We cannot afford to lose the momentum and positive trends of improvement which you, the Congress, have helped create. We cannot afford to back away from the benefit improvements such as was done by restricting the lump sum payment of bonuses. We must continue to stay competitive with the civilian sector to attract and retain the numbers of quality young men we need to operate an effective submarine force. I ask your continued support of the programs which have allowed us the gains we have seen. With that support I look forward to being able to solve these remaining problems in the next few years.

SUMMARY

Our attack submarines today are the finest in the world, but these ships would be spread very thinly in meeting their assigned commitments in any near term conflict. I strongly support the need to aggressively pursue our mid-range goal of 100 SSN's. We must continue to improve the combat capabilities of those ships we now have through equipment and system upgrades. Because we are inferior in numbers we must ensure that the technological superiority of our submarine force is not jeopardized in the future.

Our submarine manpower shortages are still of concern, but the trends are encouraging. The attention and support of the Congress has been the key factor in our ability to keep our submarine forces combat ready, materially sound, and properly manned. I would like to express for all hands in the silent service, our sincere appreciation of this outstanding support.

I stand ready to answer any of your questions.

Senator COHEN. Thank you very much.

Admiral McDonald?

STATEMENT OF VICE ADM. WESLEY L. McDONALD, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (AIR WARFARE)

Admiral McDONALD. Good morning, Mr. Chairman, Senator Byrd. It is again a pleasure to be here this morning with you gentlemen, and to present the naval aviation portion of the antisubmarine warfare hearing.

I have prepared a written statement, Mr. Chairman, and request that it be submitted for the record, and I will be very brief in my oral summary.

As has been explained by Admiral Walters and implied by Admiral Thunman, our whole concept for ASW defense is a defense in depth. It can be perceived as the submarine passing through a series of filters, in trying to attain whatever targeting that submarine is tasked to do.

We believe that through smart tactical positioning of our forces, as has been described, we will eliminate the submarine as he tries to get to his particular target.

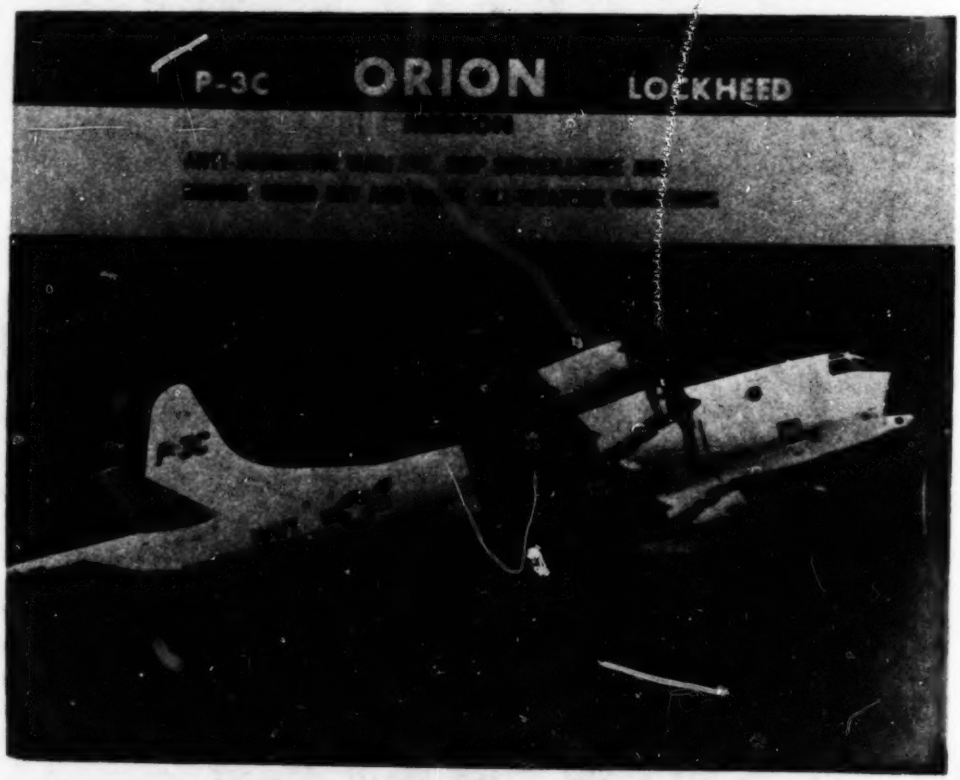
The airborne assets play a very major role in this elimination. As Admiral Walters has indicated, in the area ASW, we are looking at P-3's and SSN's to provide ASW protection. In the local area, which is defined as an area out to 250 to 300 miles from a carrier battle group, we are relying, particularly from the aviation side, on those organic ASW assets that are aboard the carrier, such as the S3-A, the SH-3 and the LAMPS helicopters, which are on the surface combatants in the battle group.

By coordinating these types of assets, we think we can continue to maintain the Navy's ASW capabilities as the finest in the world.

We are not resting on our laurels on this. One of the major improvements that we have proposed in this year's budget, in addition to some sonabuoy developments, is the proteus software programmable signal processor, which really has become the standard in its field. It affords us the opportunity of having a common employment in the P-3C Update III aircraft, in the S-3B which is the product of the weapon system improvement program for the S-3A, in the LAMPS MK III, in SURTASS, and in both attack and ballistic missile submarines.

The most powerful feature of the proteus is of course its programmability, which allows us to make changes without doing any hardware changes. We think that with the introduction of this common scheme for automatic detection, computer-aided classification, and passive tracking algorithms, the proteus will add significantly to our capability of pursuing the Soviet underwater threat.

We hope that naval aviation's direction, and we have planned it to do so, will lead to a more rapid detection, classification and kill of the current and projected threats.



Best Available Copy

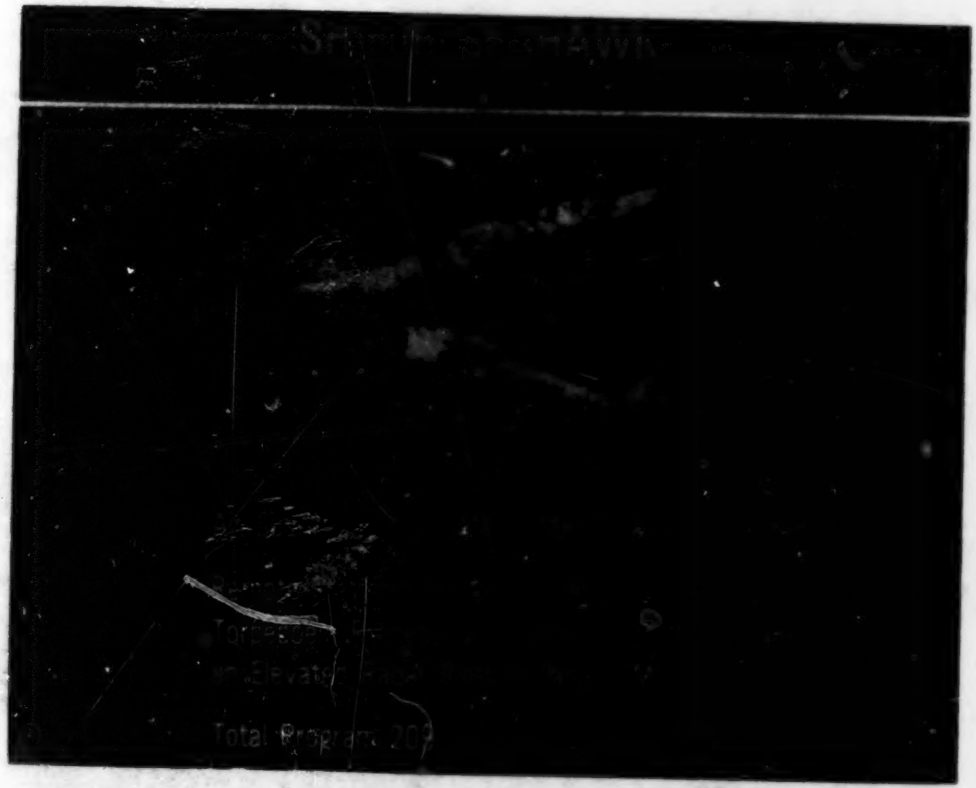
Just to review very briefly for you, Mr. Chairman and Senator Byrd, I would like to show on the screen the airplanes we will be talking about. You are looking at the P-3C here, which is our long range ASW aircraft, land-based, which provides that area coverage way out into the barriers ahead. Also it can work with the battle group to do initial detection.

Senator COHEN. The Iranians have one of those, admiral, that was buzzing the U.S.S. *Kennedy* while I was out there, on a daily basis.

Admiral McDONALD. The Iranians have some P-3's, sir, but it is not as capable as the P-3C. They do have P-3's in the inventory. In the environment that the Iranian airplane is operating in, with tactical air and sea in the carrier battle group, it is not a threat to the battle group.

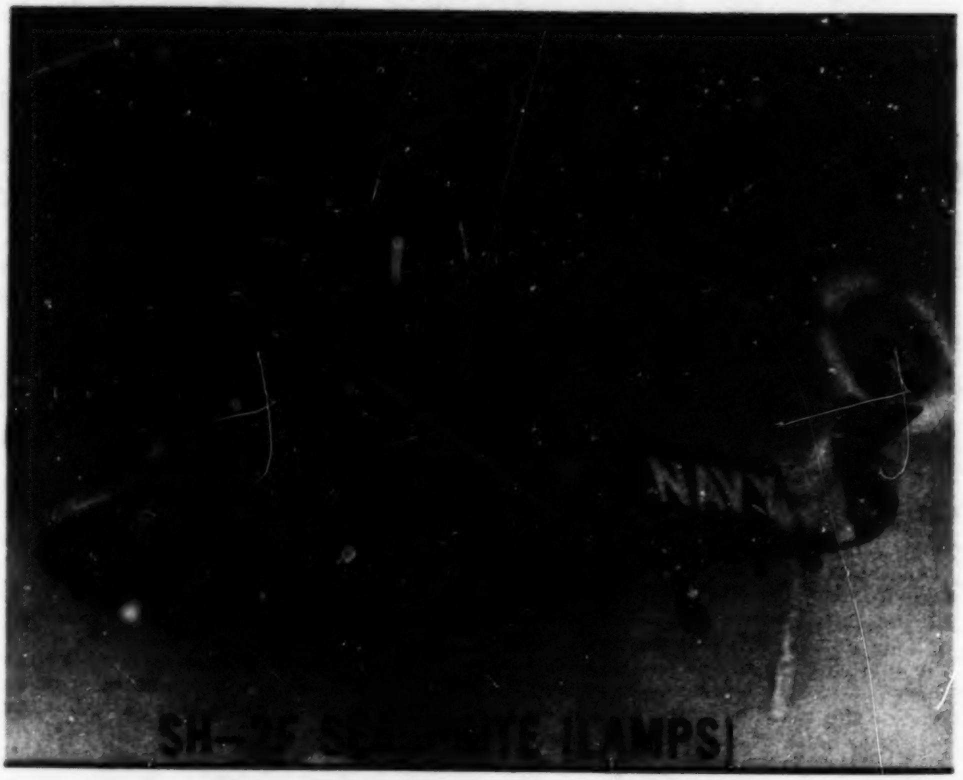
Senator BYRD. What is the range of that?

Admiral McDONALD. The aircraft, Senator Byrd, will range generally on a normal mission between 1,000 and 1,500 miles, for a mission time of basically between 10 and 12 hours.



Now you see the SH-60B which is the airborne side of the LAMPS MK III system. That system, the LAMPS MK III, describing as not only the airplane, but the gear on the ship itself, along with the RAST system that goes with it.

Best Available Copy



And the last one is the SH-2 Foxtrot, the LAMPS MK I. Again, the airplane which is in the budget for 18 this year.

Mr. Chairman, that summarizes very briefly my oral statement and we can open it up to any further questions that you may have.

[The prepared statement of Admiral McDonald follows:]

PREPARED STATEMENT OF VICE ADM. WESLEY L. MCDONALD, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (AIR WARFARE)

Mr. Chairman, it is a great pleasure for me to appear before the distinguished members of this subcommittee. This morning, I will describe Naval Aviation's current ASW capabilities and present the requirements of our Airborne ASW forces as they relate to the fiscal year 1983 budget request.

The ASW portion of the Navy's sea control mission is based on a concept of defense-in-depth depending upon a team of air, surface and subsurface units. This defense is normally thought of in two distinct parts: Local—within 250 nm of the threatened units; and Area—conducted independently or at some great distance from a convoy, surface action or battle group. The versatility and mobility of the enemy submarine within a relatively opaque medium make it especially difficult and expensive to detect and attack. Successful ASW requires a mix of systems, each designed to optimize a unique set of characteristics in the vast and complex ASW arena.

The Local ASW forces which provide ASW protection for aircraft carriers, underway replenishment groups, amphibious groups, and convoys are called direct support forces. These forces operate in Outer (out to 250 nm) and Inner Zones (out to about 30 nm). Our Outer Zone Forces are the primary prosecutors of submarines capable of launching cruise missiles—before or during the act of firing. In this role, non-acoustic sensors such as radar and ESM are important contributors. Outer Zone Forces must also be equipped to provide passive sensor detection opportunities as well as active sensor attack and re-attack capabilities. Outer Zone Direct Support Forces are VP, SSNs, S-3 (when the CV is present), TACTAS ships with LAMPS MAR III SH-60B, and LAMPS MARK I ships with SH-2F helicopters. Inner Zone

Best Availabl

Forces must be equipped to function in the high ambient noise levels radiated by the vessels being escorted with operations characterized by short reaction times. Active sensors are of prime importance in this area. Inner Zone Forces consist of ships with active sonars, and SH-3H helicopters with dipping sonar, and the S-3A utilized in the pouncer role. These Local ASW forces epitomize the principal that successful ASW requires defense-in-depth.

For the Area ASW task, the attack submarine with its long range, passive alert systems, and the P-3 aircraft, with its long radius of action, and very sensitive acoustic and non-acoustic sensors, combine to make an effective warfighting team.

The integral battle group air assets for ASW are currently the fixed-wing S-3 VIKING and the SH-3 SEA KING helicopters onboard our carriers, and the SH-2 LAMPS MK I helicopters onboard our surface combatants.

Of these integrated ASW assets, the performance of the S-3 VIKING has been much less than desired due to reliability and maintainability problems. To mprove this situation, we have placed significant management effort, and funding, into an S-3 readiness improvement program. Additional spares, procured two years ago, are now beginning to be delivered to the fleet and we are seeing modest availability rate improvements. To continue progress in this are, a planned Weapon System Improvement Program (WSIP) will reach the operational squadrons in the mid-1980's to update the S-3's avionics to meet the threat predicted in the late 80's and 90's. Improvements in the acoustic processing suite will accompany an improved ESM system with greater coverage and classification capability. The radar will be modified to incorporate long range target identification capability. Since the S-3 production line is closed, there is a fixed number of assets available to the current eleven squadrons. When CVN-71 enters the fleet in the late 1980's, a requirement to stand up the 12th squadron will exist. At that time, there will be an immediate shortage of S-3 aircraft. This shortage will grow through the 1990's, and become critical with the introduction of modern air wings on CVN-72 and subsequent carriers. Since there is no S-3 replacement aircraft planned until the late 1990's, a decision to reopen the S-3 line prior to this date or develop a replacement aircraft must be forthcoming in the near term.

The SH-3 SEA KING provides the battle group with an inner-zone ASW capability. Its dipping SONAR is the only airborne sensor that can detect submarines in this high noise environment. The SH-3 is an old helicopter, and projections show a severe shortage of assets developing as these aircraft begin to retire in the mid-1980's. To prevent this, we are planning to extend the service life of the SH-3 airframes until its planned replacement, an SH-60 variant with an updated AQS-13F sonar, can be introduced. The SH-3's will then be transferred to our SAR force.

The LAMPS MK I and MK III helicopters are employed on surface combatants in a variety of roles. Communicating ASW information electronically between helicopter and ship yields accuracy of analysis not available on small aircraft. In turn, those aircraft extend significantly the sensor and weapons delivery ranges of the ships. The LAMPS MK I is scheduled to continue its service on platforms not suited to accommodate the larger and heavier LAMPS MK III Systems. The Navy plans to introduce the SH-2F aircraft into the Naval Reserve Force along with the LAMPS MK I capable ships now being transferred to the Naval Reserve Force. The procurement of new SH-2F's to meet active and reserve ship requirements is included in this Budget request.

The airborne part of the LAMPS MK III System, the SH-60B helicopter, extends the potential detection range from the first to third acoustic convergence zones, improves tactical effectiveness in every area, and does so with greater reliability. Like the SH-2F, the SH-60B also functions in the Anti-Surface, Surveillance and Targeting (ASST) role, utilizing radar and passive electronic sensors to identify targets beyond the ship's radar and ESM range.

The land-based P-3 forces are essential in conducting attrition operations in area ASW role to reduce the enemy submarine forces before they encounter friendly surface units. This attrition acts as a force multiplier by preventing local ASW/AAW forces from becoming overwhelmed by enemy submarines or the cruise missiles launched from them. In addition, when CV forces are elsewhere engaged, the VP forces combine with the LAMPS-ship/helicopter teams to defend Underway Replenishment Groups, Amphibious Assault Groups, Surface Action Groups or convoys.

During the fiscal year 1983 budget deliberations, the Navy was forced to confront extremely severe affordability problems and had to look closely at vertical program cuts in an attempt to identify funds for higher priority requirements. At one point, production programs which were being stretched out were considered for cancellation. If the Navy had been forced to close a production line, then, of all Navy programs, the P-3 force in the near term could best sustain such a line closure. Howev-

Best Available Copy

er, it was determined that the economic impact to our allies, the mid-term modernization of our maritime patrol force provided by the P-3C, and the long term affordability of maintaining our P-3 force levels would be best served through continued P-3 production. Therefore, we plan to continue P-3C production to achieve an all P-3C active fleet.

Naval aviation's future in ASW leads toward more rapid detection, classification, and kill of the emerging threat. We must be successful. If we are not successful in destroying the newer submarines, then what has been a difficult ASW problem, becomes the very difficult AAW problem of destroying large numbers of high-speed antiship missiles in flight.

In summary, the U.S. Navy's concept of ASW defense-in-depth can be thought of as the application of a series of filters through which the threat must pass. Submarines are eliminated successively as they close their objective. Airborne assets are a major contributor to this ASW sea control concept. The P-3 forces provide both Area and Outer Zone fixed wing ASW support to amphibious groups, underway replenishment groups, surface action groups and convoys when they are not accompanied by a CV. The CV battle group brings its own ASW protection with the S-3A, SH-3 and LAMPS capable ships to further filter out closing submarine threats. By coordinating airborne, surface, and subsurface ASW forces, a potent synergistic effect is produced, making the U.S. Navy's ASW force second to none.

The following are descriptive summarizes of Naval Aviation's major ASW programs:

P-3C ORION

The P-3C ORION has been in production since 1969 and has enjoyed an evolutionary development of its sensor systems through the Update program. This aircraft is acclaimed as the world's foremost maritime patrol aircraft and is in great demand by our allies seeking to replace their lesser capable maritime air patrol fleets. In international crises, the P-3's play a vital role in the Navy's rapid response to an ocean area and they will play a critical role in the event of a major conflict in the detection and destruction of enemy submarines, while also providing harassment of enemy shipping and surface fleets.

In January, the P-3C Update III completed a highly successful operational evaluation. This latest improvement to the P-3C adds the PROTEUS Advanced Signal Processor system which will significantly improve the ORION's ability to detect and track the quieter new generation Soviet subs. PROTEUS is the most advanced acoustic system in existence, and is planned to be used in the S-3 Weapons System Improvement Program, the SH-60B LAMPS MK III, as well as being used on a number of surface ships and submarines. The system is not only the most sensitive in existence, but has the built-in flexibility to allow the P-3 and other platforms to adapt easily to handle advanced sensors now under development. The P-3C Update III is planned for production in November 1982 and will enter fleet service in May 1984.

In 1977, we started production of the P-3C Update II's which equipped the P-3's for the first time with the HARPOON, an over-the-horizon, air-to-surface missile. Since that time, we have also initiated a HARPOON backfit program and plan to have all active fleet P-3's equipped to employ the missile by early 1985. This will provide the Navy a world-wide responsive, anti-surface capability to handle the rapidly growing Soviet "blue water" fleet.

Another significant improvement planned for the P-3's both in production and retrofit, is the Infrared Detection Set (IRDS). This superb sensor allows the P-3 crews to identify surface targets day or night. This capability is particularly important in the dense shipping regions such as the Mediterranean Sea, Sea of Japan, and South China Sea where submarines frequently operate on the surface at night.

The Navy's goal is to achieve an all P-3C active fleet by the late 1980's or early 1990's. Presently there are eighteen of the twenty-four active fleet squadrons flying P-3C's. In addition, eight other nations fly the ORION aircraft, with the Dutch Navy currently taking delivery of the latest version, the P-3C Update II. As we introduce the new model P-3C's into the active fleet, the older but modernized P-3B aircraft will migrate to the Reserve squadrons.

In fiscal year 1983, the budget plans procurement of six P-3C aircraft and funds for continued system improvements to match the rapidly improving Soviet Naval Forces. The major upgrades for the P-3C are a new Electronic Support Measures (ESM) system, new communications system (fleet satellite communications), an improved radar for stand-off classification of surface targets and better periscope detection, and an improved acoustic sensor/localization system. The request also includes

Best Available Copy

funds to maintain a modern Reserve P-3 fleet to deter the very large Soviet submarine threat. Among the more significant Reserve P-3 modifications are: Infrared Detection Sets; DICASS and triple vernier modification of the AQA-7; HARPOON air-to-surface cruise missile systems; Secure HF voice (Parkhill); and Improved ESM for the HARPOON equipped P-3B's.

The fiscal year 1983 includes $329.4 million for the production of six aircraft, and advance procurement of five aircraft in fiscal year 1984. Additionally, $12.4 million is requested for initial spares funding. The fiscal year 1983 flyaway unit cost for the P-3C is $39.1 million.

SH-60B SEAHAWK

The SH-60B SEAHAWK is the airborne sub-system of the Light Airborne Multi-Purpose System (LAMPS) MK III scheduled for installation in FFG-7, DD-963, CG-47 and DDG-993 class ships. The total LAMPS MK III system includes the SH-60B, the ship electronics, the helicopter landing system, and helicopter support facilities. LAMPS III is a computer-integrated, ship-helicopter combat system that greatly increases the flexibility, fighting reach and effectiveness of surface combatants.

The LAMPS MK III is optimized for Anti-Submarine Warfare (ASW), but has, as well, a secondary mission of Anti-Ship Surveillance and Targeting (ASST).

The SEAHAWK is a derivative of the Army BLACK HAWK Helicopter. It will carry a crew of three, approximately 2000 pounds of integral mission avionics, and will have provisions for sonobuoys and MK-46 torpedoes.

The first SEAHAWK flew in December 1979. Weapon system integration, weapon system flights, SEAHAWK/FFG-7 interface tests, Navy technical evaluation, and preliminary operational testing were completed successfully in 1980 and 1981. The aircraft has flown over 2600 accident free flight hours and has made over 1000 at-sea landings aboard the USS *McInerney* (FFG-8). The Navy's final at-sea operational evaluation was completed early this year. A review of all technical and operational testing to date has shown that the aircraft has met all of its performance specifications; there are no major technical problems with SEAHAWK.

The fiscal year 1983 request includes $995.4 million for the production of 48 aircraft, and advance procurement of 64 aircraft in fiscal year 1984. In addition, initial spares funding in the amount of $236.2 million is requested in fiscal year 1983. The fiscal year 1983 flyaway unit cost of the SH-60B is $14.4 million.

SH-2F LAMPS MK I

The SH-2F LAMPS MK II has been operational since the early 1970's. LAMPS MK I has accumulated over 185,000 flights hours including day, night, and all-weather conditions, and over 75,000 landings on ships at sea.

The LAMPS MK I weapon system is a SH-2F helicopter, built by Kaman, deployed aboard FF 1040 and FF 1052 frigates in the primary role of anti-submarine warfare (ASW). The SH-2F is primarily a reactionary vehicle that responds to submarine contacts gained by the parent ship, other ships in the force, or other ASW aircraft. The aircraft-to-ship data link is used to transmit acoustic information to the ship's combat information center for processing. The LAMPS aircraft has an on-board capability to re-detect and classify and attack enemy submarines.

Plans are to continue operating the SH-2F into the late 1990's to cover the FF 1040's and FF 1052's until they are retired; and to cover the MARK I configured DD 963's, FFG 7's and CG 47's until the LAMPS MK III is in the fleet. The latter ships will be backfitted to accommodate the LAMPS MK III system.

The fiscal year 1983 request includes $189.4 million for the production of 18 aircraft, and advance procurement for 18 aircraft in fiscal year 1983. In addition, initial spares funding in the amount of $15.7 million is requested in fiscal year 1983. The fiscal year 1983 flyaway unit cost of the SH-2F is $9.8 million.

Senator **Cohen**. Admiral Walters, perhaps we can discuss initially the surface ships and their ASW mission capabilities. How effective are our current surface ships against the advanced improvements that were made by the Soviet Union? Specifically I would like you to talk about what improvements we have had in the DD-963 ships, and also the CG-47. How capable are these two surface ships against the threat?

Admiral **Walters**. The first point I would make is that these are the most quiet surface ships that we have ever built. They can, therefore, operate in an environment that permits their sensors to work properly. This also makes counterdetection by the submarine more difficult.

There also have been improvements in hullmounted sonars. These sonars have both a passive and an active capability. However, we really need to proceed with the towed array as the passive capability that really provides the big pay-off.

Our capability is good today but it becomes more marginal as opponent submarine capability is improved, thus we need to get these towed arrays in our ships. They are a high priority in my procurement plan: The SQR-18's, which are going into the FF-1052's now and subsequently the SQR-19's, which is an improved model.

They will give us a greatly enhanced capability of detection.

Senator COHEN. You are going to integrate the new developments into the older surface ships?

Admiral WALTERS. Yes, sir. You have to look at these capabilities as fitting three different classes of ships. We are putting the least investment in our older ships with the SQR-18 or 18A. It will be a good array and is compatible with the LAMPS I capability which we will retain on the FF-1052 class.

In the next group of ships, such as DD-963's, which are newer ships, we will make a greater investment by converting them to be LAMPS III capable, putting the more capable SQR-19 tail in them, upgrading the SQS-53 sonar successively to the B, and then to the C, and also installing the ASW combatant system.

In new ships, we will take advantage of all of those things during construction.

Senator COHEN. Admiral Walters, I know that you are a supporter of the DDGX, and there have been some critics who have said that we ought to forget about the DDGX and go with the CG-47. How do you respond to that? What specific improvements would the DDGX give you over the CG-47? What improvements have been made in capability, design modularity, engine efficiency, and so forth?

Admiral WALTERS. First the DDGX will have a degree of modularity in the weapons systems. Second, it will be a quieter ship because we will be able to take advantage of design from the very beginning of that ship without having all of the backfits that have occurred that may have upset some of the gains we made in the 963 originally by putting many additional combat systems in the ship.

A third factor is that the DDGX will be a much more survivable ship from the standpoint that it is in fact designed for the future, with reduced superstructure, reduced radar cross-section and the quieting aspect I mentioned. It will be the first ship to be built that will be capable in a radioactive, chemical or biological environment. It will have better seakeeping capabilities, and will have essentially the same weapons capability, but not quite as many missiles and one less channel to handle targets as does the CG-47.

It is a new ship, designed for the future, with all the capability to make it a true destroyer type ship. The fact that we have made it smaller will make it more affordable in the numbers that we need. We simply could not afford to continue to build CG-47's to meet destroyer requirements, so we have developed a ship that is almost as capable as a CG–47 but not nearly as expensive.

Senator Cohen. Do you intend to backfit any of these improvements into the CG–47's?

Admiral Walters. The improved SQR–19, for example, would go in the CG–47. The vertical launched ASW stand-off weapon which Admiral Thunman referred to would be put into those CG–47's which have the vertical launch system.

Most of the things that we know how to do in survivability are being designed into follow on ships, as a change from the original design, and will be delivered with later ships.

Senator Cohen. You have also put a towed array on the ship to complement the SQS–53–C sonar. I know that that has generated some criticism in terms of the weight and the cost. Tell me, what do you hope to achieve with that?

Admiral Walters. Are you referring to the CG–47 or the DDG–51?

Senator Cohen. The DDG–51.

Admiral Walters. My rationale for adding the towed array capability to the DDG–51, in spite of the fact that it does not have an organic LAMPS maintenance capability, is that detection of submarines in the open ocean is the most critical aspect of the problem. The DDG–51, although it does not carry its own LAMPS, will be operating with a variety of forces which will have LAMPS embarked. The DDG–51 will be in the inner screen. In that position it will have all the advantages of the air assets that Admiral McDonald talked about, plus the contribution of direct support submarines. To emphasize, detection is the primary concern.

In the other forces with which the DDG–51 will operate, such as the amphibious force or the underway replenishment groups, it will be there primarily as an anti-air warfare ship because of its excellent capabilities in that warfare area. The same rationale applies to the surface action groups.

Nevertheless, the number of sensors that you have will determine how many submarines you detect. So it is a matter of obtaining a synergistic response from that ship with very little increase in cost. The equipment can easily be accommodated in the platform.

Senator Cohen. In the hearings we have had in the past, Admiral, we discussed the capability of the FFG–7's MK 92 fire control system, and apparently it has its critics as well; the fleet does not think too much of it. We are told that the coherent receiver transmitter is going to fix some of the problems.

You have also indicated that you are not too happy with the surface sonar system itself, and it has not been testing well. I was wondering, what are we going to do to correct the problem?

Admiral Walters. Are you referring to the active sonar?

Senator Cohen. Yes.

Admiral Walters. The SQS–56. Yes, sir. It is true that when that ship was designed, that we accepted a short range sonar in the ship. Perhaps one could criticize that decision in hindsight but the principal capability of the FFG–7 lies in its passive capability.

At the time we built those ships, we were thinking in terms of using the passive capability as the primary sensor and in fact it will be available for all of those ships. The active sonar in the FFG-7 is designed for close in detection and tracking. Perhaps we cannot afford to have a large sonar in every ship. I think that is the case with the FFG-7. It was a low cost, low mix ship, in which we sacrificed some capability, and specifically did not put a bigger, more expensive active sonar.

Senator **Cohen**. What do you intend to do? Will the towed array and the LAMPS-III correct that problem?

Admiral **Walters**. Yes, sir. The towed array and the LAMPS-III were designed as the primary sensors and weapons delivery systems and give the FFG-7 an excellent capability.

Senator **Cohen**. This year you have asked for long lead time procurement for a new class of ocean surveillance ship. I would like to know why you are moving away from the monohull design, and what does it give you for the cost?

Admiral **Walters**. The AGOS SWATH is what you are referring to, Mr. Chairman. When we examine the overall requirement from the fleet commanders for open ocean surveillance, we see a number approaching 24 or 25 ships would be needed. In looking at the overall affordability issue, we decided that we could probably afford only 18, so that is a compromise position of what we can program against our larger requirement.

We are building 12 of the monohull T-AGOS. In looking at the areas of the world where fleet commanders have listed their requirements, we find two areas, specifically the Northwest Pacific and the North Atlantic, which have sea conditions over the year that are significantly higher than many other areas of the world.

The small monohull ship that we are building now is essentially an offshore supply boat, a commercial modernization of that design. It is not a very comfortable ship to ride at sea. In the higher sea states anticipated almost year-round in these two areas I have mentioned, we need something that has more stability: First, for crew comfort which you cannot discount because these people have to sit on displays day in and day out; and second, from the standpoint of controlling the accuracy of the array, the directivity of the array, which affects the accuracy of the location of a target.

In looking for alternate platforms, the SWATH ship has specific characteristics which give it stability in heavy seas. Thus, we have chosen that platform, which has been under development for the past 10 years or more, and used this application for its introduction into the fleet.

Senator **Cohen**. I had a chance to spend some time on a frigate out in the Indian Ocean, coming off of an aircraft carrier. That was quite an experience in maintaining one's balance; consequently I appreciate what you are saying in terms of stability.

Admiral Thunman, before I yield to Senator Byrd for questions, let me talk about submarines just for a moment.

Last year, and I assume the same figures still hold, we were told that we have to maintain a construction rate of roughly three to four SSN's per year to reach that goal of 100 attack submarines. This year you have only requested 2. I guess I want to know, how come?

Admiral THUNMAN. It is simply an issue of affordability, Mr. Chairman.

Senator COHEN. Did you not originally budget three submarines and only one Trident?

Admiral THUNMAN. Are you talking about this year's 5-year defense plan?

Senator COHEN. Yes.

Admiral THUNMAN. The plan as submitted now has two, and that is the administration's plan. It also has 17 across the 5-year period, which will meet the 3.3 per year construction rate required in order to reach the 100 SSN goal.

Senator COHEN. But I want to get back to why we dropped in fiscal year 1983 from three down to two, and why we added a second Trident.

Admiral THUNMAN. Again, sir, I would say it is an issue of affordability, considering all the needs of the Navy. I would stress, though, that the 17 in 5 years is important, and I certainly hope to work hard to achieve that across that period.

Senator COHEN. Well, when we come to the question of affordability, we are all aware of the problems that EB has had in the past and I know that there have been some significant improvements in terms of the management at Electric Boat. But I am also aware of a letter that was addressed from the Navy to Chairman Tower saying:

> Unless strong measures are taken by Electric Boat management, it is highly doubtful that the later Trident submarines will be delivered to the contract schedules.

So I guess the question I have and other members are going to have, is what are we achieving by going with two Tridents as opposed to three SSN's?

Admiral THUNMAN. We have here Admiral Fowler, Commander of Naval Sea Systems Command, who can speak to the progress we are making with Electric Boat.

Admiral FOWLER. I believe the letter you are referring to is from Secretary Lehman.

Senator COHEN. Yes.

Admiral FOWLER. If my reference is correct, it is talking about some concern that we have in the out-year Trident submarine manning. As we look at Electric Boat, right now we think their manning of these SSNBN's is not adequately to deliver the entire program that they have, all that they have now, on time. We are generally on time on the earlier Trident submarine, but we are worried a little bit about the out-year Trident submarines not being adequately manned. As a result of that, we sat down with Electric Boat approximately 3 weeks ago to start discussions with them as to what actions can be taken and should be taken to bring those submarines into an earlier delivery date. In fact, rather than missing the present contract delivery date but an earlier delivery date. We expect that those discussions will be completed by the end of June.

I would not want to preempt what the results of those discussions will be, but I think that it will be favorable.

Senator **Cohen**. Admiral, what would be the consequences if those were reversed, if you went with one Trident per year on a steady basis, and went with three attack subs?

Admiral **Fowler**. I am not sure I understand the question. If we authorize and fund one Trident per year on a steady basis, which is about what we have done for the last few years, we are going to wind up delivering one Trident per year. We just will not get that any sooner.

Admiral **Thunman**. In this year's budget, with two Tridents in the fiscal year 1983, it makes up for the lack of Trident last year, so we essentially have a one per year program.

Admiral **Fowler**. We had one in last year, which Congress did not authorize. We did get the long lead time material for that, so that when we made the contract for the ninth Trident, which was the fiscal year 1981 authorized ship, we made options for the next two submarines. So we have options with the contractor which expire in February for these next two submarines, priced options. So we are ready to go as soon as we get the authorization and the funding to award these two ships.

Senator **Cohen**. What I am asking is what would be the cost factors involved in the event that you went to three attack subs and only one Trident this year?

Admiral **Thunman**. Well, let me say that the Trident submarine costs about $1.38 billion per ship in fiscal year 1983 dollars, and the 688 class is about $598 million per ship. So there would be some trade-off there that would permit us to do that. To give you exact numbers, though, I would have to look into it and provide it for the record.

[The information follows:]

SUBMARINE CONSTRUCTION FUNDING

The total obligational authority (TOA) required for the one SSBN/three SSN alternative would be approximately $730 million less than for the two SSBN/two SSN alternative as shown below.

[In millions of dollars]

	2-SSBN	2-SSN	1-SSBN	3-SSN
End cost	2,768	1,197	1,416	1,824
Less advanced procurement	527	169	283	262
Full funding	2,241	1,028	1,133	1,562
Plus advanced procurement	244	416	0	504
Total obligational authority	2,485	1,444	1,133	2,066

[In millions of dollars]

	End cost	Total obligational authority
Difference:		
2-SSBN/2-SSN	3,965	3,929
1-SSBN/3-SSN	3,240	3,199
Total	725	730

Senator **Byrd**. About a 2 to 1 ratio in cost?

Admiral **Thunman**. Yes, sir.

Senator **Cohen**. Counsel is asking me to put to you the question of whether or not, if there is in fact a delay by the Congress on that second sub, the Trident, what would be the cost consequences in terms of procuring it at a later time? If there is a break in the production schedule, what is going to happen in terms of the cost?

Admiral **Fowler**. It would delay the award of the second of the two in the 1983 budget by at least 4 months.

Senator **Cohen**. What does that translate into in terms of future costs?

Admiral **Fowler**. I cannot give you the exact cost on that.

Senator **Cohen**. It would be appreciated if you could. As you know, the Navy has come in and requested funds for two aircraft carriers, saying that they can expect savings of some $750 million by getting two, as compared to one.

What I am asking is, let us look at the situation for the two Tridents. We proceed on the basis of having two. What does that save you? Could there be savings by going ahead with three SSN's and only one Trident this year? And looking at the future, what is the funding impact on the future budget?

Could you make some sort of estimate in terms of what the delay would mean in terms of cost, and what it would do militarily, if in fact Congress should decide to go ahead with the three SSN's and one Trident.

Admiral **Fowler**. It would be on the order of $80 to $100 million increase in cost. And I would like to correct that for the record if I may because I have to look at some time factors, and probably a reduction in outlay in 1983 of about $11 million.

Senator **Cohen**. And if a third submarine were simply added to the budget?

Admiral **Fowler**. A third 688?

Senator **Cohen**. Yes. Both in terms of outlay and budget authority. You see, what I have to have is——

Admiral **Thunman**. We will have to give you that for the record, Mr. Chairman.

[The information follows:]

SUBMARINE CONSTRUCTION FUNDING

If a third SSN is added to the budget request, the total obligational authority for the SSN 688 budget line should be increased by $622.2M. The outlay of funds in fiscal year 1983 would increase from $10.8M to about $15.5M.

There can be no military assessment of a trade off comparison between having an additional attack submarine in lieu of the requested 2nd TRIDENT SSBN. Failure to fund the second TRIDENT could reduce the number of TRIDENT submarines in the force by one, thereby reducing and delaying the overall strategic force effectiveness. On the other hand, an additional SSN would help in reaching the Navy's near term goal of 100 multipurpose SSN's sooner. There is a military requirement for both.

Best Available Copy

I would like to add to what Admiral Fowler said about the second Trident in 1983, though. If we do not have it, it gives the contractor the option for a production break, and we also lose the option that we achieved in the last contract, which was an option for two more, which I believe would involve some cost savings.

Senator **Cohen**. What kind of production break would there be? What are the projected costs of that break, if in fact we do that? These are items I would like to have.

Admiral **Thunman**. We will provide that for the record.

In looking at it, and this is just an offhand number, including what might occur at Electric Boat, as well as what might occur at support contractors, I have heard a number of about $300 million, but I would like to provide it for the record.

[The information follows:]

SUBMARINE CONSTRUCTION FUNDING

Construction problems which caused earlier delays in delivery dates, which precipitated the congressional action last year in deferring the *Ohio* class ship from the fiscal year 1982 budget, have largely been resolved. Additionally, the contract which was awarded for the fiscal year 1981 *Ohio* class ship contains firm "Fixed Price" options for two ships in fiscal year 1983. If only one ship is authorized a new contract would be required for the deleted ship when it is authorized as a fiscal year 1984 ship. This would be subject to new negotiations, including cost and schedule negotiations with any impacts of production break being factored in. Approximately $340 million more would be required to procure the second fiscal year 1983 ship as a single ship in fiscal year 1984. Of this amount, $225.5 million is attributable to not exercising the priced option as an fiscal year 1983 ship and instead procuring it as an fiscal year 1984 ship.

The effects on the U.S. workforce of deferring one ship is unknown, but additional loss of jobs in many areas would increase already high unemployment. This could also be detrimental to the Navy-Contractor relationship in that one of the major criticisms of the shipyard industry contributing to high costs is the instability of the Navy shipbuilding program. The U.S. has stated its commitment to have defense second to none, a move at this time to delete or defer one of the *Ohio* class submarines in the fiscal year 1983 request could be taken by the Soviets and the rest of the world as lack of resolve to ensure the maintenance of a credible, invulnerable, up to date strategic force, particularly in view of the age of our present systems and the undefined prospects for rapid development of other new systems.

Senator **Cohen**. Admiral Fowler, you are going to get back to me in terms of what we would need, what outlay and budget authority for a third 688?

Admiral **Fowler**. Yes, sir.

Senator **Cohen**. Senator Byrd?

Senator **Byrd**. Admiral, what is your numerical goal for Trident?

Admiral **Thunman**. Well sir, we have no specific goal today. We plan to build at the rate of one a year, and with that building rate and with the projected retirements of our Poseiden submarines in the nineties, we will have 20 Trident submarines in the year 1998.

Senator **Byrd**. How many Tridents would you have actually operational by the end of the next 5 fiscal years?

Admiral **Thunman**. About eight. We will deliver about one Trident per year at first and eventually about one every 8 months. So after 5 years we will have eight operational Trident submarines.

Senator **Byrd**. Well now, after the next 5 fiscal years, at the end of fiscal 1987, will you have reached your numerical goal of 100 SSN's?

Admiral **Thunman**. No, sir. In 1987 we will have reached 95 SSN's, and will not reach the goal of 100 until 1995.

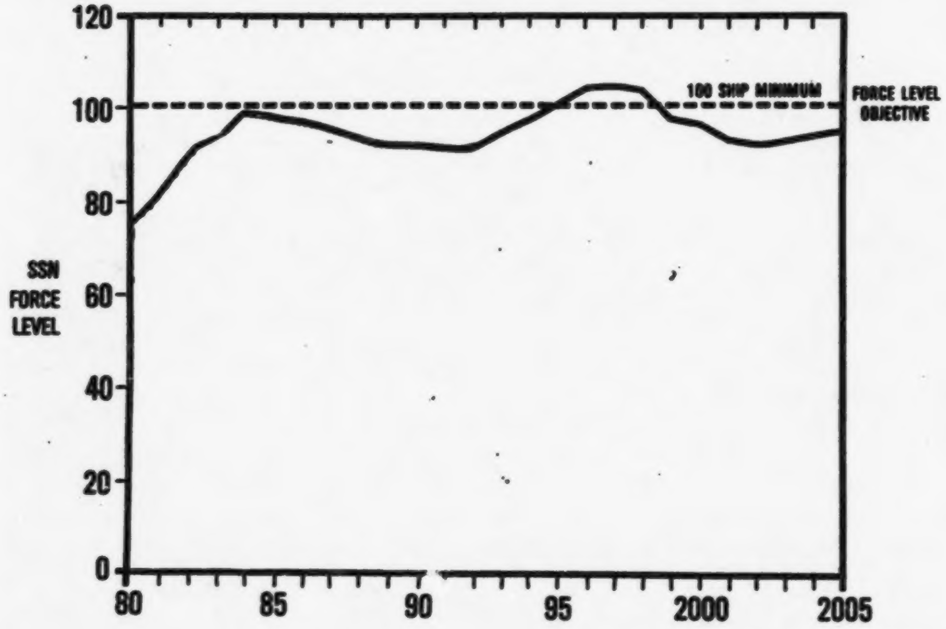
Senator **Byrd**. Until 1995?

Admiral **Thunman**. Yes, sir.

Senator **Byrd**. But you will have reached 95 at the end of 1987?

Admiral **Thunman**. Yes, sir. And as you can see on this graph we drop down to 90 or so in 1991 and then we increase to 100 in 1995. And this is as other ships are retired at the end of their projected life.

NUCLEAR ATTACK SUBMARINE FORCE LEVELS



Senator **Byrd**. What do you regard as the projected life?

Admiral **Thunman**. Thirty years for both the 688 class and the 637 class submarine, and about 25 years for the 594 class submarine.

Senator **Byrd**. How many diesels do we have in service?

Admiral **Thunman**. We have five deployable diesel electric submarines in service. We have a sixth that we use strictly for research and development. It is not deployable. A total of six; five of which are deployable.

Senator **Byrd**. Admiral Walters, last year the committee was very concerned about cost increases in the LAMPS III helicopters. As I recall, the cost for this system had gone from about $2 billion to around $7 billion.

Can you provide us with the latest cost figures on LAMPS III?

Admiral **Walters**. Our cost figures have not changed for LAMPS III other than due to the inflation indices. There has been no cost increase other than that due to inflation indices.

Senator **Byrd**. Now you are speaking of the last 12 months; is that it?

Admiral **Walters**. Yes, sir.

Admiral **McDonald**. May I inject something in here, Senator Byrd? Of course, Admiral Walters and I have worked closely on this.

The aircraft side of it has driven a lot of that cost. The last SAR cost figures for the LAMPS MK III, those dated December 31, 1981, reflect a cost of the program of $6.7 billion. This is up from the March 31 SAR. The figure rose from $6.3 up to $6.7 billion, so roughly a $400 million increase.

Of that number, $151 million was due to inflation, which is what Admiral Walters was referring to; $237 million was in changes which were instituted to control the cost created by management actions taken as a result of a cost assessment team having looked at the program very carefully to see what was driving those costs. This team worked with Sikorsky, trying to ascertain where the costs were growing, worked with the Army, with the Black Hawk, to see that we were in fact working in sync with them. We feel as of today, that the costs for the program of 204 LAMPS MK III SH-60B helicopters is a good figure, with the exception of the unprogramed inflation for the future. Since we can continue to predict that the OSD inflation indices that are provided, will not match the marketplace, then there will be some growth in the out-years.

That does not include the $699 million in that cost figure that is in the O. & M.N. side, which is reflected in the ships themselves. That is the aircraft side.

Mr. Cann has something he would like to add to that, sir.

Mr. **Cann**. Last year when we testified on this program, we pointed out that we had a management review ongoing, and at that time we were asked the question, did we anticipate any further cost growth, and we stated that based on the initial review of that cost team, we anticipated somewhere between $400 and $500 million total additional program growth that was not defined.

Over the year, we have identified all the growth, which is what has just been discussed. The first part of the year, with one change in the inflation indices, we made up a major improvement in the program. The most recent cost indices put our cost growth at just about $460 million and I will get that number for the record, but cost growth is not something that we did not discuss last year.

[The information follows:]

LAMPS MK III COST GROWTH

The Navy previously briefed you on the results of the Navy Cost Assessment Team, which was convened by the Secretary of the Navy to review the cost of the LAMPS MK III program. This Team felt that the program was underfunded by some $465 million dollars, exclusive of inflation when compared to the 31 December 1980 Selected Acquisition Report (SAR). When the new administration came in they changed the indices in March 1981. It was then necessary to use the March SAR as the benchmark to compare the current SAR to. When the December 1981 SAR was compared to the March 1981 SAR the increase in required funds, including all known escalation, was $388.2 million.

The current changes are contained in the 31 December 1981 SAR, the pertinent pages are attached to this insert.

Best Availabl

Selected Acquisition Report
System: LAMPS MK III WEAPON SYSTEM
($ in Millions)

As of Date: 31 December 1981
Base Year: 1976

E.7.(B) Cost Variance Analysis
Base Year FY 76 Constant $

	DEV	PROC	MILCON	SUBTOTAL	ESCALATION	TOTAL	REMARKS
DEVELOPMENT EST	$ 579.7	$2,008.0	$ 9.0	$2,596.7	$ 1,290.9 ($262.1 DEV) ($1,022.4 PROC) ($6.4 MILCON)	$ 3,887.6	
PREVIOUS CHANGES							
Economic	--	--	--	--	+ 571.1	+ 571.1	ESC: DEV + 11.4 PROC + 558.3 MILCON + 1.4
Quantity	--	+ 40.8	--	+ 40.8	+ 54.5	+ 95.3	ESC: PROC + 54.5
Schedule	--	- 19.8	--	- 19.8	- 23.7	- 43.5	ESC: PROC - 23.7
Engineering	+ 2.0	+ 34.6	--	+ 36.6	+ 64.8	+ 101.4	ESC: DEV + 1.4 PROC + 63.4
Estimating	+ 17.9	+ 715.3	- 1.5	+ 731.7	+ 939.6	+ 1,671.3	ESC: DEV + 12.5 PROC + 928.9 MILCON - 1.8
Support	+ 1.2	- 2.8	--	- 1.6	+ 67.6	+ 66.0	ESC: DEV + 0.4 PROC + 67.2
Subtotal	+ 21.1	+ 768.1	- 1.5	+ 787.7	+ 1,673.9	+ 2,461.6	ESC: DEV + 25.7 PROC + 1,648.6 MILCON - 0.4
CURRENT CHANGES							
Economic	--	--	--	--	+ 161.5	+ 161.5	ESC: DEV - 0.1 PROC + 161.6
Quantity	--	- 109.6	--	- 109.6	- 115.4	- 225.0	ESC: PROC - 115.4
Schedule	--	--	--	--	- 16.2	- 16.2	ESC: PROC - 16.2
Engineering	--	+ 10.6	--	+ 10.6	+ 13.6	+ 24.2	ESC: PROC + 13.6
Estimating	- 0.9	+ 98.7	+ 4.0	+ 101.8	+ 114.7	+ 216.5	ESC: DEV - 0.6 PROC + 111.3 MILCON + 4.0
Support	--	+ 109.4	--	+ 109.4	+ 117.8	+ 227.2	ESC: PROC + 117.8
Subtotal	- 0.9	+ 109.1	+ 4.0	+ 112.2	+ 276.0	+ 388.2	ESC: DEV - 0.7 PROC + 272.7 MILCON + 4.0
TOTAL CHANGES	+ 20.2	+ 877.2	+ 2.5	+ 899.9	+ 1,949.9	+ 2,849.8	ESC: DEV + 25.0 PROC + 1,921.3 MILCON + 3.6
CURRENT ESTIMATE	$599.9	$2,885.2	$11.5	$3,496.6	$3,240.8 ($287.1 DEV) ($2,943.7 PROC) ($10.0 MILCON)	$6,737.4	

54

SELECTED ACQUISITION REPORT SYSTEM: LAMPS MK III WEAPON SYSTEM AS OF 31 DECEMBER 1981

b. Current Changes:

(1) Economic (+161.5M).—Incorporation of economic escalation (+161.5M).

(2) Quantity (−225.0M).—Deletion of twelve (12) FFG class ships from the LAMPS MK III backfit program (−225.0M).

(3) Schedule (−16.2M).—Ship schedule of November 1981 changed procurement profile from seven (7) to five (5) years (−3.1M) and rephased the installations (+12.2M); Adjustment of November 1981 schedule to accommodate deletion of twelve (12) ship systems (−25.3M).

(4) Engineering (+24.2M).—Design engineering and testing for the Navy Standard Airborne Computer (+22.7M); Production Lost II through IV reliability and maintainability screening of Contractor Furnished Equipment (+34.8M); Deletion of electronic subsystem benches and testing (−33.3M).

(5) Estimating (+216.5M).—Airframe production configuration changes (+31.8M); Airframe change allowance increase (+4.1M); Adjustment for change of engine material (+9.8M); Reduced engine tooling requirement (−2.2M); Adjustment to reflect increased hours for integration of air system (+46.4M); Transfer of air/ship interface effort to support (−22.7M); Additional CFE tooling for increased rate (+23.6M); Congressional Mark for FY 82 program (−14.6M); Government Furnished Equipment changes (+21.3M); Estimating adjustment due to refinement of estimates to offset new economic indices (−20.6M); Refinement of prior estimates (bill of materials, increased hours for manufacturing, assembly and fabrication, incorporation of BLACK HAWK Lot III production actuals, adjustment for outyear overhead rates, Government/Contractor Furnished Equipment vendor cost, adjustment for training facility cost) (+160.1M); Support services reduction (−1.2M); Prior year adjustment (−0.3M); Rate adjustment to O&M,N (FMP) appropriation (−19,0M).

(6) Support (+227.2M).—Refinement of support requirements (+7.8M); Transfer of air/ship interface effort to support (+22.7M): Adjustment to meet approved operational availability of spares requirements (+188.2M); Production support for Data Link second source (+8.5M).

Senator Byrd. Well, refresh my memory. What is the inflation rate that you use for the indices?

Best Available Copy

Mr. **Cann**. I believe the inflation rate we are using now is——

Admiral **McDonald**. Senator Byrd, we will have to provide that. It is decreasing in the 5-year plan, and I think in the fiscal year 1983 planning it is somewhere between 7 and 8 and it is coming down to slightly below 6 or right at 6 in the last 2 years of the plan. We will provide that for the record, sir, if we may.

Senator **Byrd**. Yes; I think that is important, for us to know what rate of inflation you are using, you are assuming. And in addition to supplying it for the record, could someone from your office call my staff with that information?

Admiral **McDonald**. Yes, sir.

May I correct one thing, Senator Byrd? I told you that the $699 was O. & M.N. and that is not true. It is SCN costs, ship construction, Navy, which is for the retrofit and for building into the ships the landing area for the LAMPS MK III program. That is not an aviation cost to the program, and that is the difference in the $6.7 and the $7.3 that you are talking to, sir.

[The information follows:]

LAMPS MK III

The escalation rates used in pricing the LAMPS MK III fiscal year 1983 budget submittal are those provided by OMB and are contained in the December 1981 Selected Acquisition Report [SAR]. The rates are displayed below by appropriations and by fiscal year.

Fiscal year	Development R.D.T. & E.	Procurement APN	Procurement OPN	Procurement O. & M.N. (FMP)	MILCON
1983	7.0	8.5	7.0		7.0
1984		7.3	5.1	5.1	
1985		7.5	4.73	4.73	
1986		6.5	4.53	4.53	
1987		6.5	4.44	4.44	
1988				4.44	
1989				4.44	
1990				4.44	

Senator **Byrd**. Thank you.

Senator **Cohen**. Admiral Thunman, you came out pretty negative as far as your testimony on the diesel-electric submarines, and the first question I have is, is there any use, do you foresee any use for the diesel-electric submarines for the Navy? Particularly, I would say if a significant threat develops in the Caribbean.

Admiral **Thunman**. Well, as I indicated, the diesel electric submarine certainly is a capable submarine in the barrier role, as long as it is not opposed by antisubmarine warfare aircraft or a surveillance system, and clearly that would be the case in the Caribbean.

[Additional information follows:]

DIESEL-ELECTRIC SUBMARINES

The real issue here is that there is no defined mission for a conventional submarine in the Caribbean. There is no need for a fixed-barrier operation. True, the distance from homeport to the operating area may be shorter, but this same proximity to the continental United States makes it possible for other forces, such as land-based aircraft, to fulfill ASW missions. When it comes to sea control, the conventional submarine does not compare well in numbers required and is still at a disadvantage compared to the nuclear attack submarine because of its limited endurance.

Senator **Cohen**. What is the Navy doing with the R. &. D. money that we authorized in the appropriation last year for diesel-electric submarines?

Admiral **Thunman**. We have commenced a study to look at the German HDW–2000 design, which was directed, and we are also looking at a conceptual design of a diesel-electric submarine. We are also looking at specific components that go into the diesel submarine, such as the battery and deisel engines. We expect to have that study ready for you by the first of August.

Senator **Cohen**. How are these programs going to help if we do not have a design? I am not sure exactly what we are doing with the money.

Admiral **Thunman**. Well, sir, on the design side, we have to decide if we want to build a modern-day diesel-electric submarine, or build a submarine with items off the shelf. We have a ways to go in the design area before we are ready to say what kind of submarine we would build.

We are also looking at the HDW–2000 submarine but it has some limitations which I cannot really cover in this session.

Senator **Cohen**. I get the feeling we are wasting a lot of money because the Navy has no intention of going forward with any kind of efforts in the diesel engine field.

Admiral **Thunman**. Well, sir, we will work hard and make an honest effort to look into a suitable design, but the studies we have provided you in the past have shown that the most cost effective way for us to go is to build a multimission nuclear attack submarine.

[Additional information follows:]

DIESEL-ELECTRIC SUBMARINES

I would like to elaborate on plans to utilize the fiscal year 1982 funds provided for a study of diesel-electric submarine designs. Work began on the Congressionally-requested diesel-electric submarine design in January 1982. That design effort will produce the conceptual design for a near-term state of the art diesel-electric submarine. The details of the design, together with the recommend R. &. D. program (and associated costs) will be forwarded to the Congress on about 1 August 1982. The fiscal year 1982 funds, in addition to supporting the submarine design effort, are being used to initiate examinations of advanced engineering of major diesel-electric submarine components (batteries, diesel engines, motors, etc.) to evaluate the mission effectiveness of the conceptual design candidate, and to support the detailed evaluation of the German HDW T2000 submarine design. The 1 August conceptual design does not represent a ship which would support authorization—the authorization decision is appropriate only after the more detailed full engineering design has been completed.

Senator **Byrd**. Would you yield at that point?

Senator **Cohen**. Yes.

Senator **Byrd**. Do I understand correctly that the diesel-electric submarine will be satisfactory for use in the Caribbean?

Admiral **Thunman**. In one role, sir, only in the barrier role at a chokepoint. And of course that would mean that we would home port the submarine close to the areas where we intend to operate them.

Senator **Byrd**. Well, is there any other environment that the diesel will be satisfactory in?

Admiral **Thunman**. Any submarine is a very deadly weapon system if the submarine is on the target's track. It is almost like a mine ahead of the target. So any submarine is deadly if it can reach that position. But with the number of things we have to do with our attack submarine force, which involve offensive operations, which involve operations close to the enemy shore, we do not see that——

Senator **Cohen**. What if the enemy is coming to you, though?

Admiral **Thunman**. Well, sir, I would hope that we are going to go to him first. I think it is very important that our Navy, especially our submarine force, have the capabilities to go forward to threaten his situation, rather than wait for him to come to ours.

Senator **Cohen**. Well Admiral, it is pretty clear from the evidence that I have heard today that the Soviets are undertaking a rather significant build-up in nuclear attack submarines, for example. They certainly do not intend to home port them, either under the polar caps or keep them close to shore. They intend to put them out into the oceans. And I assume that means coming to us.

Admiral **Thunman**. Yes, sir. Here again, it is difficult in this session to discuss this area, but I think they also mean to use a number to prevent us from coming there. I think they are very concerned about our attack submarine capabilities putting them at risk.

Senator **Cohen**. Frankly, I think we are well beyond that point where they fear that we are going toward the Soviet Union. I think what they have undertaken, from what I have been able to see, is a significant blue water navy. They seem intent to challenge us at every major area of the globe, certainly on the seas. That means coming into the Caribbean; that means in every aspect.

So I think we are just not being candid with ourselves if we think that they are simply concerned about an attack by the U.S. attack submarines close to their shores. I think they intend to project power. Everything that you gentlemen have testified to so far indicates they intend to build a force to project power, including aircraft carriers, including 10 attack submarines a year. So I think they are coming to us.

It is wonderful to have these multimission attack subs, assuming we can pay for them, and assuming we can have the two aircraft carriers and the battle groups and so forth. But there is going to come a point in time, and I am afraid that Senator Byrd and I may face it on the floor this year when they say you cannot have that much; that you cannot have that much money. Then we are going to find ourselves in the position of what can we get for this amount of money?

So the question I have and had last year is, does it make any sense to try—given the future constraints we are going to be faced with—does it make any sense to try to explore some other options in some limited areas? Should we be getting more in numbers, even though they are less capable? That is the whole theory behind the authorization and appropriation for the R. & D. in this area.

Now we have not even discussed the fact that there was the specific directive in last year's authorization conference report which said: Use some R. & D. funding in the field of battery research and find out if it can be applied for use in nuclear submarines. We have not heard anything about whether we are doing any R. & D., whether there are alternative, improved, experimental batteries for diesel-electric submarines. That was one of the requests made by the committee.

Admiral **Thunman**. Sir, we are exploring batteries. As a matter of fact, we are looking at an improved lead-acid storage battery which would improve our capability some 20 percent. Let me comment about them coming forward to our shores.

Clearly, that is an option. They have the option also to go anywhere in the world, for example, the Indian Ocean. The Indian Ocean is 10,000 miles from Pearl Harbor, about 13,000 miles from San Diego and about the same from Norfolk. If you deploy the diesel-electric submarine from Pearl Harbor to the Indian Ocean to try to counter the threat there, it would take you 40 days at a speed of——

Senator **Cohen**. I understand that. That is not what I asked you. I understand that. If they are going at a rate of 10 a year, they can put 50 out there in the next 5 years in the Indian ocean, and if you extrapolate that out to the next decade, they have another 50. And I assume they are not all going to be confined to the Indian Ocean. And I do not for a moment believe we should have diesel electrics trying to take on their *Alfa* class.

What I am asking you is whether or not, in view of the fact that they are undertaking this kind of power projection role, in what I assume is an aggressive posture, as opposed to a defensive mission, there are areas where we could use diesel-electrics in a barrier mode that would have a capability, at a lower cost, to cause them some problems?

Admiral **Thunman**. The answer is yes, sir, they do have that capability. On the cost side, just to give you a comparison, life-cycle costs—the diesel-electric submarine costs about half of the nuclear-attack submarine. Initial procurement, about a third.

There are roles that the diesel could fill, but we only have limited funds and it has certainly been our conclusion thus far that the most cost effective way to go is to build a nuclear attack submarines.

Senator **Cohen**. You see, this comes back to the debate we had last week that Senator Hart raised during the question of aircraft carriers. Assuming you are living in a society which is reluctant to spend the kind of money that is necessary to offset, if not match the Soviet military buildup, what do you do in a free society, faced with those democratic constraints? If in fact you are going to get less money to do a job that you know you have to do, what do you do? Do you build fewer, more capable ships, more diverse in their roles and missions, or do you try to spread it around realizing that you are going to have a reduced capability in other parts of the globe?

How does a free society deal with a military threat, where the enemy, the adversary, is spending 15 percent of its GNP for the purpose of building its military power, against a country that may hit 7 percent if the President has his way, or something far less, if the public or the Congress should decide otherwise?

Those are the dynamics which are in fact in place, and the reason we are raising these questions is that, assuming we cannot do all we would like to do, what can we do with these other options and what is the trade-off? What is the trade-off in capability assuming that we do not have as much capability per ship but we have more of them? Does that give you more survivability, by dispersing that power?

That is the issue I raise during the hearing last Friday. I have not been satisfied. I do not know what the answer is. I am asking the experts. I do not know. I do not know how you evaluate the importance of dispersal of forces under a situation in which you are outnumbered and will be outnumbered. We live in a free society which simply will not appropriate the number of dollars necessary at a time in which the American people think they are at peace, when in fact there is a tremendous military build-up going on.

So these are not just issues raised by people, for the sake of raising them. We are trying to look into the future and to see what the climate is going to be, what the ability of this Congress and future Congresses is going to be to appropriate dollars. If we all had our druthers, we would say, let us build as many big carriers and as many attack subs, and so forth, as we can. But the fact is, we have to deal with reality. Reality is such that we are going to run into a problem with the Appropriations Committee; we are going to run into a problem on the floor.

So that is why we are exploring these issues. What can we get with limited amounts of resources, recognizing that you are not going to get as much as you would like for the multimission subs, and the multimission aircraft carriers? That is why I am raising these issues.

Admiral WALTERS. I think Mr. Cann would like to add something if he could on the diesel submarine.

Mr. CANN. Senator, if I may, first of all, diesel-electric submarines, which have been very successful ever since the first World War, have had a completely different mission in life. They have been engaged primarily in antishipping. As a matter of fact, I really do not know of any very successful antisubmarine warfare diesel electrics for a number of reasons, some of which we cannot get into in open session.

Senator COHEN. Without going into any specifics, are we not relying upon our allies to give us some antisubmarine warfare capability?

Mr. CANN. To some extent. One of the points I was going to make is that even our adversaries, in the process of trying to improve their ASW capability, have demonstrated that they are moving directly into nuclear-propelled SSN's as the only way in which they would be able to provide an adequate ASW force.

One of the difficulties with using a diesel-electric as an ASW platform is it has to stay on the snorkel for significant periods of time in order to charge its batteries. And during that time, it is not available. So to some extent you have to have two on station for one because they have to change positions.

Senator COHEN. Are we not doing something with the lithium battery?

Mr. CANN. True, except you still have to be in a position to recharge. You have to come off whatever you were doing to recharge and you are still limited to very slow speeds. I think that if we can ever get this all out in the open in detail and provide you the proper information, we should be able to demonstrate that the cost tradeoffs over the long haul, including taking into account the crew sizes, the training, the number of diesel submarines you have to have on station, those that have to be moving back and forth to station, and all the rest of it, should be at best a wash. And you still then have a series of platforms which are very limited in capability.

Senator **Cohen**. Senator Byrd?

Senator **Byrd**. Admiral Thunman, as I understood your remarks earlier on, where there is significant enemy airpower, that the diesel is not as satisfactory a weapon?

Admiral **Thunman**. Yes, sir. As Mr. Cann pointed out, the diesel submarine has to periodically snorkel. It has to put a snorkel mast out of the water in order to do that, in order to get the air to operate the diesel engines. This is a problem. The aircraft radars today are very good and that mast presents a detectable target to those radars.

It is also a noisy evolution when he operates those diesel engines and that makes him vulnerable to any long-range sonar system that is aimed at that noise level.

Senator **Byrd**. Well, would it be accurate to say that its use is quite limited except in an environment where there is very limited enemy airpower or capability?

Admiral **Thunman**. Yes; that is correct, Senator.

Senator **Byrd**. The Caribbean would probably be one area and I cannot think of any other area that would fall into that category at the moment.

Admiral **Thunman**. I agree with your assessment; yes, sir.

Senator **Byrd**. Thank you.

Senator **Cohen**. Admiral McDonald, it was reported and/or leaked to the press earlier this year that P-3 procurement would be canceled. Then that decision was somehow reversed. What was the cause for the reversal?

Admiral **McDonald**. Mr. Chairman, we were looking at ways to respond to the growth of naval aviation in the most affordable manner that was possible, and I hate to keep going back to affordability, but that is the driver in all of our procurement, as it has been for Admiral Thunman.

The P-3 was looked at and perceived in the initial phases of the budget formulation as the most logical aircraft line that could withstand a program reduction—a significant program reduction—and I say that because the P-3 force is relatively stable. We had a goal of updating the P-3 force to be an all P-3 Charlie force by the late 1980's or the early 1990's, and of course that would then roll the P-3B's that had been updated by TACNAV MOD back into the Reserve Force. Those airplanes would last well into the 1990's without any requirement for replacement.

So when we balance that against the other priorities within naval aviation we made an alternative plan to reduce P-3's and even to stop the line for a period of up to 5 years.

In the course of exploring that to see what the savings would be and the impact that it would have on foreign military sales and our allies, I think you have indicated in your submarine discussions they play a role in our ASW force in the air also. We have eight nations that are flying P-3's and the Dutch are deeply involved in a P-3C update II procurement—should we have canceled or significantly reduced the number, this would have made the unit costs go up for the foreign military sales programs.

In pursuing it even further, we found that fiscal gains to be derived from this action, as opposed to the startup costs that we could get from the Lockheed Aircraft Corp., really proved that it was not prudent to stop the line or to reduce it to the number of three. So we have come to a number of six in this year's request. If you add the Netherlands buy onto that number, that is, the foreign military sales, then you drive that total production number up to about nine.

We are hopeful that the Australians, who are tentative in their plans to buy, may look at moving their potential procurement up a year, and that would drive the number up to 13. That is the rationale, Senator Cohen, that drove the decision to first lock at it from the stop standpoint and then look to restore it incrementally at some level, and then to come to the final request for six.

Senator **Cohen**. Admiral Walters, in your statement you indicate "We are forced to eliminate some $25 million from the SQS-53C sonar system." Apparently you examined this and you are now planning to put it into the lead ship of the DDGX class.

Is the program adequately funded to assure making it in the lead ship?

Admiral **Walters**. The $25 million we lost last year, which occurred in the DDG-51 line, did seriously set us back. That caused us to look at the whole program and we have restructured it. We took two approaches. The first is to restructure the technical program to recognize less funding. Second, to endeavor to meet the same IOC for the equipment.

We have done that with the idea of providing the most capability and keeping the program moving forward on a low-risk basis. We are still short some funds. In fiscal year 1982 we are trying to reprogram $7 million. In fiscal year 1983 we need $21.7 million beyond that submitted in the budget. Those are the shortfalls we see now to make the restructured program meet the IOC for the lead DDG-51.

Senator **Cohen**. You are talking about $28 million just to make it in the lead ship?

Admiral **Walters**. Yes, sir.

Senator **Cohen**. And even if you had the $28 million, do you think it could make the lead ship, assuming there is a lead ship?

Admiral **Walters**. I am reasonably satisfied that we can, and I would like Mr. Cann to address that a little further.

Senator **Cohen**. As I mentioned to you before, there is a question, that unless there is some modification of the DDGX we may not even see it. But assuming for the moment that we will see the DDGX, go ahead.

Mr. **Cann**. Senator, one point that should be made is that we made a very bad tactical error last year when we took the SQS-53C program and essentially bolted it into the DDGX. Sometimes, trying to determine the best place to put an upgrade program, sometimes putting it off by itself has its problems, and we thought that since the DDGX last year looked like it did not have very many problems, it was a good place to keep the sonar rolling, in tune with the program.

One of the points that should be made is that the SQS-53C improvement program, which is very important to the continued success of the surface navy to use both the towed array and the LAMPS system against the kinds of threats we see, will be backfit into all DD-963, CG-47, and 993 ships. And I think that what we should do is provide for the record that backfit schedule because the thing that we are very keen on is making sure that we do not miss those backfits of the DD-963's.

[The information follows:]

AN/SQS-53C CURRENT PROGRAM INSTALLATION SCHEDULE FOR DD-963, DDG-993, AND DD-998 CLASSES

Current year 1990: DD-985, DD-986, DD-988, DD-989, DD-990, DD-991, DD-992, DDG-993, DD-1001, DD-1002, DD-1003.

Current year 1991: DD-964, DDG-994.

Current year 1992: DD-965, DD-966, DD-967, DD-968, DD-971, DD-995.

Current year 1993: DD-969, DD-970, DD-972, DD-973, DD-974, DD-975, DD-976, DD-977, DDG-996, DD-997.

Current year 1994: DD-978, DD-979, DD-980, DD-981, DD-982, DD-983.

Current year 1995: DD-984, DD-987, DD-998, DD-999.

Current year 1996: DD-963, DD-1000.

NOTE.—CG-47 schedule is being developed and will be provided when available.

Now in relooking at the program with Admiral Walters' staff, we did a thorough job of looking at all the ways we could recover from the loss of the money in the tail end of the 1982 budget markup. We are going to such measures as initially using available GFE equipment at the laboratories in order to piece together the initial test equipment. We have also eliminated some of the capability in the passive area that we no longer feel will be necessary because we feel that the passive capability of the SQR-19 will provide that particular capability.

So the entire thrust of the effort to get an improved active system, and at the present time I think that it is certainly within the ability of the NAVSEA to meet the DDG-51, and more importantly, to meet the backfit schedules of some of these other ships.

Senator COHEN. Thank you.

Admiral Thunman, back to you for a moment. You spoke rather glowingly about the SUBACS program. It will cost about $1.3 billion over its life. That is a lot of money for an R. & D. program, particularly since you have some gaps in ASROC and SUBROC. I would like to know, what does this program give you for $1.3 billion? We could perhaps build two other SSN-688's for that price?

Admiral THUNMAN. Well, the entire program includes an improved sonar system, fire control system, combined through common data bus. It gives us a lot of flexibility. It permits us to operate without single point failures. It permits us to modify equipment without excessive expenditures.

I certainly realize it is an expensive system, but there are lots of things in it. The electronic countermeasure system is folded in, as well as the sonar, the fire control, even some of the radio systems.

It is an architecture for the entire forward end electronics suite for the future.

I would like Mr. Cann——

Senator **Cohen**. What application does it have for the past? In building this system for the future, are you going to be able to backfit this into existing systems?

Admiral **Thunman**. We are really looking at putting it into the 688 class submarine. It will not be backfitted into any earlier class submarines.

Senator **Cohen**. What about surface ships? Can it be used for surface ships?

Admiral **Walters**. We have an ASW combat system that I referred to in my opening remarks, Mr. Chairman. It is different from the submarine system, but it does the same thing. The information you get from passive sensors is handled a great deal differently than what you get from active sensors. It requires motion sensors; surface, subsurface, and air platforms. We are getting to the point where it is beyond the realm of a human being to be able to keep up with it on a pencil plot the way we used to do it.

So we have a similar system.

Senator **Cohen**. Admiral Thunman, let me come back to you on torpedoes. The committee was set back a little bit when you requested a significant increase in funding for the MK-48 ADCAP torpedo at the time when the President was calling for cutbacks last September. In fact, I do not think the committee authorized the increase. And I assume that the reason for the requested increase was you were having some funding problems, or some difficulties with the program itself.

I was wondering, what has been done to get a handle on that particular program?

Admiral **Thunman**. We have conducted a "should cost" study of the development phase, and we are working to provide the results of that study to the Congress shortly. Clearly, the program had been underestimated, had not been well defined, and errors had been made at the contractor's level, by the Navy, and our labs. It is an ambitious torpedo program necessary to counter the threat. Once all that was required to do was determined, the costs were considerably more than what had been initially estimated.

We have changed the management on the Navy side, and there have been some changes in management on the contractor's side, and we have restructured the program management within Navy. We set up several monitoring systems to insure that we do not get into this position again. We feel that we have the program in hand now.

Senator **Cohen**. Senator Byrd.

Senator **Byrd**. Admiral McDonald, you have 37 P-3 squadrons, 24 regular and 13 reserve. Have you concluded that this is the proper mix?

Admiral **McDonald**. Yes, sir, Senator Byrd. We feel that that responds to the area ASW threat and for the mobilization potential that the reserve force provides for us, we feel that 37 is an adequate number right now, sir.

Senator **Byrd**. And you feel the mix of 24 to 13 is the proper mix?

Admiral McDONALD. Yes, sir.

Senator BYRD. I would assume that you could save funds by moving more to reserve status. Have costs and needs been carefully considered?

Admiral McDONALD. Yes, sir. We look at that every year as we justify the requirements as to what we believe the threat poses for us and how we plan to address that threat. The 24 active duty P-3 squadrons comprised of 19 P-3C squadrons today and five P-3B TACNAV MOD squadrons are the requirements that we perceive to meet the Soviet threat and an ASW threat at sea today, sir.

Senator COHEN. Let me come back just a moment to the MK-48. Is that going to be able to catch and kill the *Alfa* class sub?

Admiral THUNMAN. Yes, sir.

Senator COHEN. And what if the follow-on to the *Alfa* is faster?

Admiral THUNMAN. We are getting into an area that is difficult to talk about in open session, but the MK-48 ADCAP torpedo has improved capabilities which I feel are beyond those of the Alfa class submarines.

Senator COHEN. Admiral Walters, what about the advanced lightweight torpedo? My understanding is this is probably the most complex system that we have even conceived to date. What about the costs involved in that?

Admiral WALTERS. Development of a torpedo of that complexity in a small package necessarily becomes a very difficult problem. There is no cheap way that you can develop a torpedo in a given size package with the weight and size constraints we must meet in order to keep all of our launch capability that we have today.

That program also has been very carefully reviewed in recent months. We now have a single contractor and have directed additional Navy lab involvement. We understand where the ALWT program is headed now. So far it is about 2 months behind the optimum schedule for it, but it has been meeting its test objectives, and we have every reason to believe that it is going to stay on schedule. It is tight and we have a lot of testing to do, but we do not foresee any cost increase that we are not aware of.

I do not know whether Mr. Cann would want to add anything to that.

Senator COHEN. Other than inflation.

Admiral WALTERS. Other than inflation, yes, sir, but we have thoroughly reviewed that program from A to Z in the past 6 months.

Senator COHEN. Admiral Thunman, I understand there are plans to buy only 120 MK-48's in the coming fiscal year, 1983. In 1982, the minimum buy was supposed to be 144. And procurement apparently is going up to 144 in fiscal year 1984. But what I see is you have a drop from 144 to 120, with an increase of $8 million in fiscal year 1983, so you have lost 24 torpedoes, plus it is costing you $8 million more. What accounts for that?

Admiral THUNMAN. I believe the cost increase is an inflationary cost increase. I will have to provide the specifics for the record. The drop back to 120 from the 144 in the previous year was an affordability issue, and we hope to get back to the 144, which is the desired rate, in fiscal year 1984.

[The information follows:]

MK 48 TORPEDO

The fiscal year 1983 budget request was reduced from 144 to 120 units during the OSD budget review. This decision was based on a two month production delay associated with Burn-in testing. Although Navy submitted a reclama to OSD, it was not accepted and the MARK stood. As a result, two months of production at the minimum sustaining rate, twenty-four units, were removed from the budget request.

The fiscal year 1982 MK 48 torpedo budget request included, for the first time, full funding in the procurement year of the total cost of the torpedoes, including the acceptance test and evaluation (proofing) costs formerly funded in the year of delivery rather than the year of procurement. When added to the funds needed for acceptance of prior-year torpedo deliveries, this resulted in a $20.3M requirement for in-house acceptance test and evaluation in the fiscal year 1982 request. However, Congressional action taken on the fiscal year 1982 Defense Appropriations Bill redirected acceptance test and evaluation to be annualized. As a result, $13M were reprogrammed from fiscal year 1982 into fiscal year 1983 and 1984.

Additionally, the fiscal year 1983 budget submission contains a one time request for $10M to reinitiate the manufacturing of explosive material used in the MK 107 warhead. Existing government stocks are expected to be depleted by April 1984. A breakdown of the fiscal year 1982 and 1983 figures are provided.

MK 48 TORPEDO

[In millions of dollars]

	1982 (Quantity 144)	1983 (Quantity 120)
Torpedo prime production	83.3	76.3
Warhead/exploder production	10.9	9.6
Torpedo production:		
Contrator	2.8	[1] 12.5
In-house	1.4	1.1
Production engineering	2.3	2.5
Product improvement:		
Contractor	1.0	.9
In-house		
Acceptance test and evaluation:		
Contractor	2.3	.9
In-house	7.4	[2] 19.4
Fleet support	2.5	
Presetable launch vehicle (PLV) production	2.4	1.0
Total MK 48 torpedo	[3] 116.3	[3] 124.3

[1] Includes $10.0M required for reinitiation of explosive material production.

[2] Reflects annualized acceptance testing and evaluation.

[3] Does not add due to rounding.

Senator Cohen. Mr. Cann, do you have any questions about that? Is that due primarily to inflation? We have a reduced buy and an increased cost. We have lost 24 torpedoes and it is costing us $8 million more.

Mr. Cann. I do not know the answer right here, but I am sure that every time we reduce the buy on anything, the unit price goes up because of inefficient use of the facility.

Senator Cohen. But, we had the buy last year at 144 and this year it has dropped down.

Mr. Cann. I do not have the information here, sir. We would have to supply that.

Senator Cohen. All right. The reason I am putting these questions to you in open session is, that it will save you from providing a lot of written answers, and we are going to mark up starting on Wednesday. This should not take more than 5 or 10 minutes more.

Admiral Walters, we want to talk about SUBROC and ASROC now. This concerns Admiral Thunman as well. Our committee's understanding is we are phasing the SUBROC out of the submarine fleet because of an outdated fire control system, but we are not going to have anything to take its place until the next decade, when we are going to have the common ASW standoff weapon that perhaps you can talk a bit about, Admiral Walters. So, we have, in essence, a large unfilled requirement for the long-distance ASW weapon for submarines.

My understanding also is that the SUBROC contractor has proposed a package that would permit the SUBROC programs to be stretched out to fill that gap. Would you fill me in a little more in terms of what is going on?

Admiral **Walters**. I will from the standpoint that I take a large part of the responsibility for the common ASW standoff weapon. In my previous assignment as Director of Navy Program Planning, I was involved in reducing outlays to the defense budget, and we had to take some fairly severe cuts in various areas. One of them was R. & D. There were two problems, specifically the vertically launched ASROC, which was supported by what is now my office, and the ASW standoff weapon, which was supported by Admiral Thunman's office.

It appeared to me at the time that there ought to be a common approach. We are always looking for a common approach, a joint effort within Navy and with the other Services.

There are some unique similarities in this weapon regarding the surface ship ability to detect and localize the submarine for attack vis-a-vis the submarine. So we looked at this from the standpoint of trying to combine the two programs.

There are some dissimilarities as well in our requirements. One, the requirement in submarines is for a relatively small number of weapons in comparison to the number of slots I will have for them in surface ships. That is just a numbers game. There is a tendency also, if you look at history, you will find that surface ships admit to firing on false contacts, so their expenditure rates tend to be relatively high; therefore, we have always wanted to have a weapon that was as cheap as possible recognizing that we are going to be firing on contacts that are not real. Those are the major differences in the approach.

We have opted to go forward with a common ASW standoff weapon which will meet our combined objectives. In retrospect, I think that this makes a lot of sense.

As to whether or not it will meet our requirement in the same time period, I think that it can because the vertically launched ASROC, for example, will be available about 1987 or 1988 and the common ASW standoff weapon, if I understand it correctly, is projected about 1989 or 1990. So they are roughly in the same timeframe.

Senator **Cohen**. But as I understand it, we took a relatively simple system, with vertical launch, and we folded that into a much more complex system, and then reduced the funding of the combined program—you are shaking you head. We did not reduce the funding?

Admiral **Walters**. We created a new funding stream which we thought was adequate to fund the common weapon. It is true that the vertical launched ASROC is a simpler weapon because it uses a ballistic trajectory with thrust cutoff for range. When you get into the increased ranges of the first convergence zone, for example, which are objectives of both the submarine community and the surface community, then you are talking about having to have a smarter weapon with a reduced time of flight. A ballistic trajectory will not give you the accuracy of that you have to have to get there.

Also, because of the evasive characteristics of the submarine and the accuracy of locating information, you have to be able to put it there quickly to reduce your late time and that requires a faster, smarter weapon. So it is a more complex weapon.

Senator **Cohen**. Have we reduced or eliminated the vertical ASROC entirely?

Admiral **Walters**. As of right now, that program is nonexistent.

Senator **Cohen**. And what about that contractor who proposes to fill the gap between the time you get the common missile and the needs right now, for the SUBROC.

Admiral **Thunman**. Mr. Chairman, I think you are talking about the SUBROC. Let me just walk through that.

We have some 64 attack submarines capable of shooting SUBROC today. Beginning in 1984 this number will diminish yearly. The number of SUBROC missiles is also going down yearly because of the Department of Energy's warhead quality assurance test requirements.

We are in a life extension program for some of the SUBROC missiles. The contractor has proposed that we modify our fire control system so that we would be able to continue to fire this missile from all our 594 and later class submarines. We have recently just seen some of those proposals which are very expensive, about $100 million, and involve modifying fire control systems as well as extending the life of more of the missiles.

Senator **Cohen**. I think that is all we have now. I may have one or two questions to submit for the record and again, I ask if you can put your top priority on getting your responses to us.

Mr. Cann?

Mr. **Cann**. Yes, I would like to provide a paper on ASW that I will put in the record. Also, if it is all right, I would like to provide some additional information for the record on SUBACS. I do not think we had a chance to discuss that here.

[The information follows:]

ANTI-SUBMARINE WARFARE STATEMENT OF GERALD A. CANN, PRINCIPAL DEPUTY ASSISTANT SECRETARY OF THE NAVY (RESEARCH, ENGINEERING AND SYSTEMS)

ASW by definition is the destruction or neutralization of enemy submarines. The aim of ASW is to deny the enemy the effective use of his submarines.

To place ASW in perspective, it is valuable to look back at the demonstrated historical impact. In the two global wars in this century, the opposing submarine threat narrowly missed reversing the final outcome. In World War I, German submarines sank about 5,700 allied ships amounting to over 11 million tons. They started this war with only 28 serviceable submarines, and at no time did they have more than about 170 operational subs.

Best Available

In World War II, the allies lost almost 2,800 ships to German submarines, amounting to 14.5 million tons. This time the German submarine force started with only 57 U-boats and peaked at about 220 boats.

Despite the small number of operational U-boats in the first few years of the war, they were able to inflict staggering losses on the allied merchant fleet as shown in figure (1).

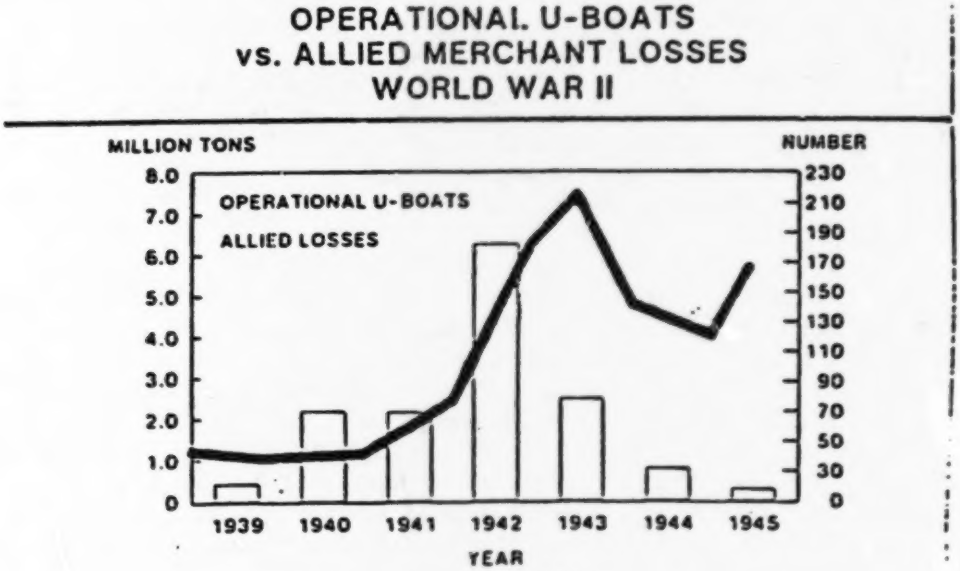


Figure (1)

The real significance is that in each of these wars, the allies needed two to three years to mount an effective ASW campaign and to be able to increase ship building to rates that would equal or exceed the loss rate. It is doubtful that we would have the luxury of such a long buildup period in any future war.

For reference and perspective, the Soviet Union now has [deleted] attack submarines, exclusive of the strategic ballistic missile submarines and special purpose submarines. Of these submarines, [deleted] are nuclear powered. Today, [deleted] attack submarines should be considered as front line platforms, as shown in figure (2).

FIGURE 2. [Deleted.]

While the total number of Soviet submarines is expected to decline slightly over the next ten years as older and less capable submarines are retired, the proportion of more effective and newer platforms is increasing.

Conceptually, classical ASW is divided into two generic categories, based on the type of operation involved and the intent of the operation.

Area ASW are those operations designed to deny the enemy the use of specific ocean areas on a continuing basis. Typically, they are intended to cause attrition to the enemy force before he can threaten friendly surface ships. Area ASW includes forward area operations in the enemy's home waters, barrier operations in straits and natural choke points, and open ocean intercepts based on information supplied by surveillance and intelligence.

Local ASW are those operations designed to protect a specific surface force, through sanitization of the surrounding water. These forces include the aircraft carrier Battle Forces, Convoys, Surface Action Groups, Underway Replenishment Groups, and Marine Amphibious Forces.

In each of these operations, specific platforms are allocated to each mission. Because of the required covertness, submarines perform most forward area operations. Barriers are composed of echelons of patrol aircraft, submarines, and minefields. Open ocean intercepts are accomplished by submarines and patrol aircraft, vectored by the surveillance network.

Area and local ASW forces are determined by availability and capability, as shown in figure 3.

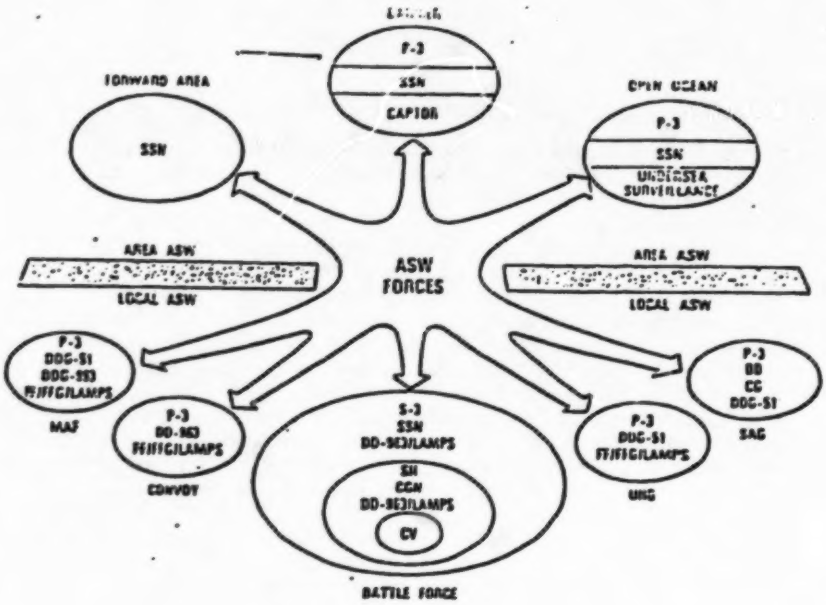

P-3
SSN
CAPTOR
FORWARD AREA
SSN
OPEN OCEAN
P-3
SSN
UNDERSEA SURVEILLANCE
AREA ASW
LOCAL ASW
ASW FORCES
AREA ASW
LOCAL ASW
P-3
DDG-51
DDG-993
FF/FFG/LAMPS
MAF
P-3
DD-963
FF/FFG/LAMPS
CONVOY
S-3
SSN
DD-963/LAMPS
SH
CGN
DD-963/LAMPS
CV
BATTLE FORCE
P-3
DDG-51
FF/FFG/LAMPS
URG
P-3
DD
CG
DDG-51
SAG

Figure (3)

As a result of Soviet technology advances the ASW problem is becoming more difficult.

[Deleted.]

This trend is projected to continue. [Deleted.]

In view of the acoustic trends, I would like to quantify our detection capability. [Deleted.] If our sensor development programs are continued to completion, and if they meet the minimum design specifications [deleted].

Figure 5 displays this capability.

Figure 5 [deleted].

One caveat applies, however. [Deleted.]

Similarly, our weapons performance can be quantified. With today's conventional weapons, the average probability that we can inflict [deleted] damage [deleted]. With the advent of the Mk-48 Advanced Capability Torpedo, the Advanced Lightweight Torpedo, and the Common ASW Standoff Weapon, we can improve these numbers [deleted].

Figure 6 [deleted].

The Soviet submarine [deleted] however, is also improving.

Consequently, we have to improve [deleted] our ASW forces. [Deleted.] This is not sufficient protection.

To summarize our ASW posture today, I have a report card, figure 7, broken out by platforms, and by the elements of ASW. There are too many "B's" and "C's" in this report card.

Figure 7 [deleted].

Based on our assessment of the ASW problem today, we have identified seven major areas of concern. Our budget request addresses these areas.

1. Weapons [deleted].
2. [Deleted] Sensors. [Deleted.]
3. Fire Control Systems and Weapons. [Deleted.]
4. *Countermeasures.*—We must improve our defensive capabilities against enemy torpedoes and missiles.
5. *Coordination.*—We can improve our overall force effectiveness if we can coordinate our platforms to take maximum use of the unique strong points of each.

6. *Surveillance.*—We must improve the resiliency and the flexibility of our Integrated Undersea Surveillance System.

7. *Force Levels.*—Finally, we must provide sufficient and balanced force levels in order to fulfill our missions.

Far from being solved, the ASW problem is becoming more difficult. We have to improve our performance against the improving opposition.

SUBMARINE ADVANCED COMBAT SYSTEM

In order for the United States submarine force to retain the qualitative advantage that it currently has relative to threat submarines, it is necessary to look at the requirements for future combat systems while, at the same time, upgrading existing systems to accommodate new weapon and sensor developments. The future combat system must be designed to maintain an acoustic advantage over the future threat by using advanced sensors and data processing techniques and must be flexible enough to accommodate future weapon developments and new missions.

Today's combat systems, while adequate for the missions of the present and near-term future, are rapidly reaching the limits of expandability. The performance advantage is decreasing while the required missions and functions continue to increase. With existing technology and system architecture, there is no room for volumetric growth, and the power and cooling requirements are already very large. Therefore, there is no flexibility for hardware growth, and software is limited by the capacity of the processors. Software revisions are extremely costly and time consuming because the centralized processing concept necessitates revalidation of all software when any change is made. Fleet experience has identified certain operability deficiencies, e.g. limitations in current display formats and data processing algorithms, but the correction of these deficiencies is relatively slow and costly. Operational flexibility is limited in current systems by the use of dedicated display consoles which restrict the user's ability to reconfigure the system for different missions or because of equipment casualties. Maintenance, logistics, and training are made more difficult by the use of unique processors and display consoles and by the interdependence of the major subsystems.

The Submarine Advanced Combat System (SUBACS) program uses a top-down engineering approach to deliver effective combat systems to the Fleet which can grow and change in the future. As stated in the Mission Element Need Statement (MENS) approved by the Secretary of Defense on 28 December 1980, factors which dictate the requirement for an advanced submarine combat system are:

The need to alter or to increase capabilities to accommodate changing threat and mission requirements.

The need for an operationally flexible system with lower-life cycle costs capable of being operated and maintained by the fewest number of personnel.

SUBACS is being designed to counter the 1990's threat while providing the flexibility and margin for growth that will keep the submarine force ahead of the threat well into the 21st century. The sensors being developed as SUBACS subsystems will provide significant performance improvements over current systems. Operability, system availability, and reconfigurability are improved through the use of common display consoles and distributed data processing. Moving away from central computers is a key concept that cannot be achieved by adapting any or all of the subsystems alone. In the SUBACS architecture, all system elements are linked by a high capacity data bus. Signal processing and computational functions are done by Navy standard processors distributed throughout the system. In this way, any subsystem can undergo software revision or hardware replacement without impacting the remainder of the combat system. Advanced electronic technology will allow a dramatic reduction in the space and weight required for combat system hardware. This will be vital to the evolutionary growth of the SSN 688 class submarine which will be our attack submarine design for years to come but which is already space and weight limited. Additionally, training requirements and life-cycle costs will be reduced by the use of standard processors and consoles which will have state-of-the-art circuitry.

In conclusion, the advantages and economics of the SUBACS concept must not be sacrificed in order to achieve near-term goals. To do so will only ensure that future submarine design, capabilities, and costs will be adversely impacted.

Senator COHEN. Thank you very much.

The subcommittee is adjourned.

[Whereupon, at 11:40 a.m., the hearing was adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

TUESDAY, MARCH 23, 1982

U.S. SENATE,
SUBCOMMITTEE ON SEA POWER AND FORCE PROJECTION,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

NAVY POSTURE

The subcommittee, met in open session pursuant to notice, at 2:12 p.m., in room 212 Russell Senate Office Building, Senator William S. Cohen, chairman, presiding.

Present: Senators Cohen and Byrd.

Staff present: Paul C. Besozzi, minority counsel; L. Wayne Arny III, and James R. Locher III, professional staff members; Drew A. Harker, and Mark B. Robinson, research assistants; Kathleen L. McGuire, staff assistant.

Also present: Buzz Hefti, assistant to Senator Warner; Jim Dykstra, assistant to Senator Cohen; Paul Schreiber, assistant to Senator Denton; Don Imgram, assistant to Senator Quayle; Gray Armistead, assistant to Senator Byrd; and Bill Lind, assistant to Senator Hart.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator COHEN. The Sea Power and Force Projection Subcommittee will come to order.

This is the last of a series of 10 hearings that we have held to date reviewing the fiscal year 1983 budget request for matters relating to sea power and force projection.

I think that everyone here is aware of the discussion which we held in this Capitol and around this country concerning the reduction in various Government programs. It is vitally necessary that careful supervision be exercised over the expenditure of the taxpayers' money.

In our hearings we have reviewed the procurement and R. & D. programs relating to sea power and force projection and we intend to do our best as the committee marks up the authorization bill in the coming days—as a matter of fact, beginning tomorrow—to carry out those responsibilities.

As we do so, I think it is important to keep in mind that providing for the peace and defense of the Nation is one of the primary responsibilities of the Government. There does not exist another organization besides the Federal Government which can carry out this duty.

In our hearings we have been shown again the absolute requirement that this Nation has for maritime power. We have treaty obligations to our allies. We have economic responsibilities to our citizens to insure the safe passage of commerce and materials across the oceans. We must have a strong Navy which can go in harm's way to defeat any adversary and assure the passage of our merchant ships on the high seas.

Today we have invited Hon. John Lehman, Secretary of the Navy, to present the Navy posture review.

Secretary Lehman, I am happy to welcome you here. We look forward to hearing your remarks and the opportunity to have the benefit of some of your answers to questions we may ask—questions which have arisen during the review of the Navy programs.

I am glad also to welcome Admiral Hayward and General Barrow. If either of you gentlemen have an opening statement you would like to make following that of the presentation by the Secretary, I would be pleased to hear it.

As is the practice of this subcommittee, we try to keep the hearings open to the public as long as possible. If there is some matter which you feel requires that we go into executive session, simply indicate that to me and we will reserve those questions for the balance of the presentation.

But, absent that, Secretary Lehman, I would be pleased to have you proceed.

STATEMENT OF HON. JOHN F. LEHMAN, JR., SECRETARY OF THE NAVY, DEPARTMENT OF DEFENSE

Secretary **Lehman**. Mr. Chairman, I have submitted a brief posture summary for the record. I would like to summarize some of the high points to you.

I was very pleased that a little over a week ago the chairman of the Armed services Committee, Senator Tower, put the dilemma facing the country in exactly the right perspective. He stated that the budget that has been put forward faces squarely, for the first time in many years, the issue and the choice of expanding the force structure to meet our commitments and by doing it now, making the commitment now, with a budget that is front loaded rather than back loaded in the 5-year plan.

The chairman also pointed out that, before any options to cut the budget could be examined, we must first examine the commitments, because the Navy did not seek and it is not the role of the Department of the Navy to engage in making national commitments. They are provided to us.

As I have said to the full committee, there exists a full web of commitments, binding in law, that obligates us in the Navy to provide forces. We are, as the CNO has so eloquently testified in past years, now not able to cover three oceans' worth of treaty commitments with a Navy that has shrunk to one-half of its size of a little over 10 years ago.

So the budget we have submitted is a balanced plan to restore the Navy to a force structure that can meet those minimum commitments in conjunction with our allies and our other services. We have succeeded, over the past 12 months, in no small measure because of the initiatives begun in this subcommittee and this full committee before that 12-month period. They set in motion tremendous new strides forward in cost effectiveness, in business management and in personnel effectiveness. We already have demonstrated enormous improvements in cost savings to the taxpayer.

We have seen the most successful 12-month period in the peacetime history of the Navy and the Marine Corps in personnel retention and recruiting because of the prudent initiatives begun in this committee and continued over the last 12 months. We are saving an enormous amount of money through the quality of personnel we are retaining. We are growing the force in quality as well as in size to meet those commitments.

CONTRACTING

In our contracting, you are well aware of our negotiations on submarines and in aircraft procurement and in aircraft carriers and frigate procurement, where we have made the strides necessary to break the spiral of cost overruns, of slackness in contract managment and execution, and in cost delays and runaway costs.

We have broken the spiral with a major series of new contracts invoving 50–50 share lines and equitable sharing of performance by the contractor. We have been able to demonstrate, not hoped-for savings but real savings, across the board throughout our shipbuilding program.

The press provides a great deal of attention to those defense programs that overrun, but they are not providing the American people with an accurate summary of what is really happening in procurement. As you know, we recently submitted, under the Nunn amendment provisions, a review of selected acquisition programs, and the Department of the Navy, with its many hundreds of programs, had to report only two out of all of those programs. The constant dollar unit cost increases in the last 3-month period. Those were the 5-inch guided projectile and the AIM–7M missile. No attention was give to that, but attention should be given to that. We have broken into the spiral of cost overruns.

SHIPBUILDING

I would like to just review some of our shipbuilding accomplishments. As you know, we delivered the *Vinson* ahead of schedule, a month ahead of schedule, and $20 million under cost. Of the other ships completed in the last 12 months, 15 have been delivered ahead of schedule, on schedule or under cost, with a total savings of $91 million to the taxpayer, totaling 900 days of early completion. Bath Iron Works for instance, delivered five guided missile frigates between February 1981 and March 1982, a total of 529 days early, at a cost savings of over $28 million to the taxpayer. Newport News Drydock delivered the U.S.S. *Carl Vinson* 34 days early. The Lockheed Shipbuilding Construction Co. in Seattle delivered a submarine tender, the U.S.S. *McKee*, 30 days ahead of schedule and $1 million under cost. NASCO, the National Steel and Shipbuilding Co., delivered one destroyer tender, the U.S.S. *Cape Cod*, at a cost savings to the taxpayer of $11 million. Ingalls Shipbuilding Division in Pascagoula has delivered four *Kidd*-class destroyers, the last delivery this Saturday a week ago, at a cost savings of $50 million. The Uniflight Corp. in Bellingham, Wash., delivered three utility boats between February 1981 and 1982, a total of 330 days early under a firm fixed price contract.

The fact is that the news in Navy procurement is very good news and I am dismayed that we do not read it in the papers and that insufficient attention is given to it. I could go on and on and have indeed submitted for the record of the full committee some $10 billion worth of cost savings that we have identified. We have, for instance, been able to identify some $425 million of direct cost savings because of the increased retention in pilots and NFO's and on and on. So we have a great success story because of the initiatives that have begun here and been carried on through this administration.

It would be a tragedy, a historic tragedy, to see that momentum undercut by a failure to carry forward these new initiatives represented in the shipbuilding program, particularly that program before your subcommittee. If we have to go back in and begin new negotiations on a reduced basis for our submarines and for our aircraft carriers, we will immediately destroy the momentum that is daily drawing in hundreds of new bidders.

TAKX PROGRAM

We have, for instance, some 25 bidders on the TAKX program when, as you know, having followed it closely just a year ago, we only expected three or five at a maximum. This is the kind of success story that we do not often see in Government. As you know, there are no real improvements to be made in the budget deficit through the shipbuilding account and to end this momentum for the sake of symbolic cuts would go down in history as one of the great failings of democratic Government in this century.

AIRCRAFT CARRIER PROCUREMENT SCHEDULE

I would like to specifically point out the aircraft carrier procurement schedule. Regardless of what we do, if the Congress decides that we will not have a force expansion and that we will live with a Navy roughly the same size it is and that we can give up some commitments, we are still going to have to buy two more aircraft carriers this decade. There is no other way to avoid a major reduction in forces.

We have put forward a program that will provide, without question, the most survivable and cost-effective method of putting airpower to sea, which is the real issue. It is less expensive than putting the same number of aircraft or the same kind of force to sea in smaller ships, which is certainly possible but more expensive.

We have negotiated, at great effort with Newport News, a procurement program that will save the taxpayers a minimum of $750 million in real cost savings, and we are confident that the GAO will support that estimate. We have, furthermore, settled for the long term the mobilization base necessary to keep at least four or five major yards from going out of business with the stability of this program. Even if we do not expand the force, the shipbuilding base must be saved in order to have any mobilization base for the future potential outbreak of conflict.

So in closing, Mr. Chairman, let me say we have a major success story, begun here in this committee prior to the Reagan administration and now carried into fruition by the Reagan administration. I would urge you to make every effort to fully support, through authorization, the balanced program and the right program that has been submitted to you.

Thank you very much.

[The prepared statement of Secretary Lehman follows:]

Prepared Statement by Hon. John F. Lehman, Jr., Secretary of the Navy

Mr. Chairman, I am pleased to have this opportunity to present my current assessment of the United States Navy posture.

One year ago I outlined to this committee our priorities for restoring adequate strength to the United States Navy and Marine Corps. For the first time in recent history, the Department of the Navy leadership testified that we had lost maritime superiority. The budget that has been presented to you by the President has as its principal objective the restoration of that maritime superiority.

As a nation with global commitments and interests, U.S. national security requirements extend far beyond its boundaries. Since WWII, we have protected these interests through a forward defense posture that has as its goal the deterrence of threats and a rapid flexible response should deterrence fail. Strong naval forces are absolutely essential to our forward strategy.

The term "maritime superiority" is not nearly as important as what is meant by that shorthand term, which is that "our nation must be capable—and be seen as capable—of keeping our access secure to areas of vital interest, and we must be able to do this in the face of the most determined opposition. A stalemate is unacceptable, because it is we who depend on the seas." Freedom of access to the seas is itself a national objective—a security imperative, an essential condition for the success of any national security strategy.

"Maritime superiority" does not mean that we must seek to be omnipresent on all oceans, nor act as the world's naval policemen. It means that in those areas of our vital national interests we can sustain the access and freedom of movement we need, even if challenged by the combined military threat of our adversaries. Geography, which strongly favors the U.S. and its allies, sets the parameters of our task. This administration's naval rebuilding program is absolutely essential to the successful achievement of this task, with the important contributions of friends and allies, and the added capabilities of U.S. air and land forces.

"Maritime superiority" provides the flexibility to offset enemy advantage and exploit weakness. Deterrence of general war is thus fortified by safeguarding the necessary reinforcement and resupply of our forward deployed units and by threatening enemy vulnerabilities in widely separated areas. "Maritime superiority" is not matching a potential enemy ship for ship, sailor for sailor, it is our capability to use to advantage important maritime areas when and where required. "Maritime superiority" is the confidence that those maritime tasks essential to our security can be accomplished successfully.

The strategy of maritime superiority is an imperative based upon national commitments that are firmly founded in law through a web of some 40 treaties around the globe. These in turn reflect our vital national interests. They should, of course, be abrogated if they do not. Therefore the commitments that our force levels are designed to meet are not a matter of the Department of the Navy's discretion, nor of the Department of the Defense. The force level presented in this budget—the 15 battlegroup 600-ship Navy; and the strengthened Marine Corps, is the minimum force expansion necessary to meet national commitments. Smaller force levels would only be sufficient and justifiable if some national commitments were to be abandoned.

The 1983 budget for the Department of the Navy embodies a major new management program. Its new elements include:

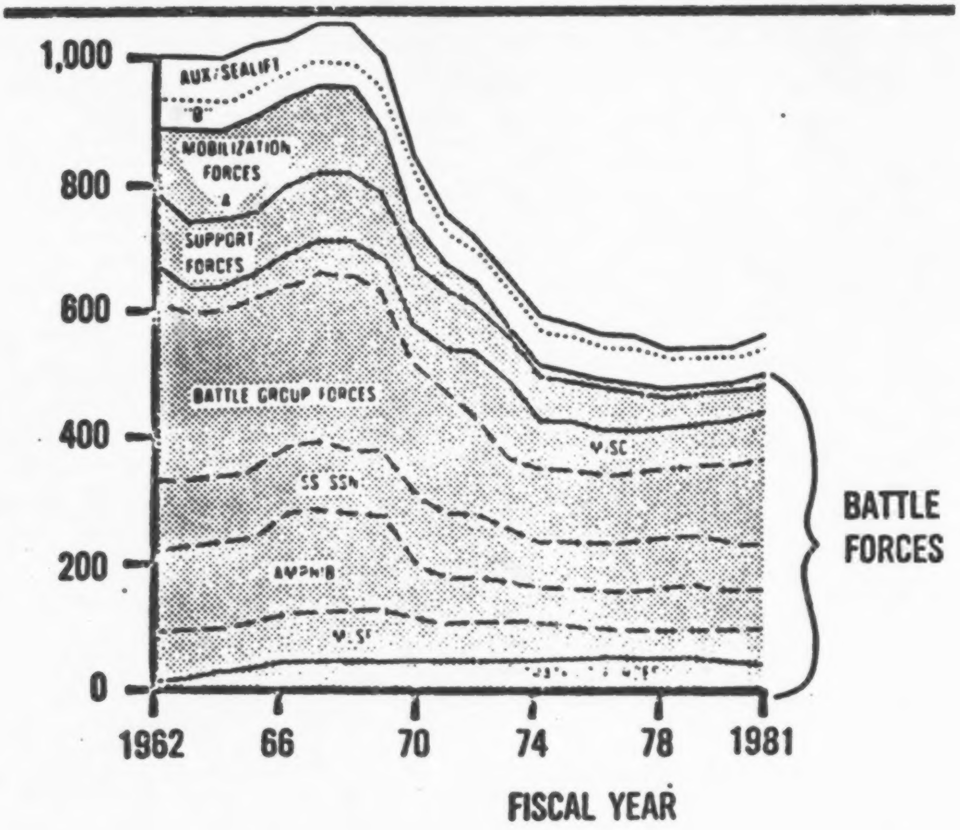
New contract discipline wherein contractors bear more risk and responsibility for performance, and have substantial profit incentive to come in under cost and ahead of schedule.

Best Available Copy

Implementation of the 31 "Carlucci" DOD management and procurement initiatives.

Multi-ship procurement of aircraft carriers.
Multi-year procurement of aircraft.
Maximum utilization of older and existing assets.
Product improvement of proven systems rather than new development.
Substantially increased competition in the shipbuilding program.
Cancellation of 43 marginal development and procurement programs.
Shortening of the development deployment cycle.

U.S. NAVY SHIP FORCE LEVELS



MAJOR PROCUREMENT ISSUES

Years of deferral have required that we begin our naval recovery program from a reduced base. As in many areas of our defense posture, the Soviets had strong momentum in their building programs. We had none. One year ago we had a base of 12 deployable aircraft carriers and 12 carrier air wings, with no replacement aircraft. We had a 469-ship fleet, which included 78 attack and 32 missile submarines. In that year we outlined a force structure expansion of some 30 percent, building to 15 battlegroups and about 100 attack submarines. The program required additional aircraft carriers, battleships, attack and strategic submarines and ships for amphibious assault, strategic sea-lift, fleet support, and mine warfare, as well as other support vessels required for a balanced fleet.

NUMBER OF BATTLEGROUPS NEEDED TO SUPPORT NATIONAL STRATEGY

Because of the emergence of global Soviet maritime power, the number of battlegroups necessary to avoid turning over any of our vital maritime areas to Soviet control is calculated on a number of factors—geographic advantage, substantial U.S.

Air Force contributions, the synergy possible with mobile Army forces and allied Navy and Marine forces, and the strike capability that *only* U.S. battlegroups can provide. The minimum number of battlegroups necessary to carry out a strategy that will maintain all of our vital interests is 15.

MULTISHIP PROCUREMENT OF TWO NUCLEAR AIRCRAFT CARRIERS

The procurement strategy of fully funding CVN-72 and CVN-73 in fiscal year 1983 delivers each of two vitally needed ships 22 months early, provides nearly four additional ship-operating years, and saves about $750M when compared to the usual sequential procurement strategy of funding carriers individually in separate years. The Navy's plan fully funds the ships' end cost in fiscal year 1983. This procurement reflects not only the full-funding policy expressed by both the Congress and the Office of Management and Budget, but will also significantly strengthen our vendor and contractor industrial bases.

The Department of the Navy has studied, and continues to study, alternate aircraft carrier designs. Congress has been provided with detailed designs of carriers ranging from 15,000 to 100,000 tons. Many of these designs would be extremely valuable military assets. Nevertheless, we conclude from all source evidence including the study of new technology that the *Nimitz*-class nuclear carrier clearly remains the most cost-effective option, and the very best means to meet both war-fighting needs and maximize deterrent posture into the future. The extensive data base the Navy has developed by operating carriers of all sizes for many decades yields no other conclusion.

The large size of the *Nimitz* permits the operation of an airwing with a four-dimensional capability. Action can be taken simultaneously against air, land, surface and sub-surface adversaries. It can operate the entire range of tactical aircraft, both conventional and VSTOL, with the flexibility to adapt to all potential military requirements. Moreover, it possesses the sustainability required not only to get to the scene of action but to stay there—and win.

The *Nimitz* design provides enormous additional operational safety and flexibility in high sea states and all-weather conditions by having a large and stable deck. Accident rates for smaller carriers currently in operation, and for those in prior years, are much higher than for the *Nimitz* class.

The *Nimitz* class now has the possible protection that we have learned—through the experiences of World War II, and through constant monitoring of the latest Soviet developments—are necessary to fight, take damage, and prevail.

AIRCRAFT PROCUREMENT

The 1983 DON budget includes procurement of 288 aircraft. The number is approximately double that planned previously and saves the taxpayer an enormous amount of money, through economies of scale. We have succeeded in reducing the constant dollar unit cost of the F-14, A-6E, C2A and EA6B substantially.

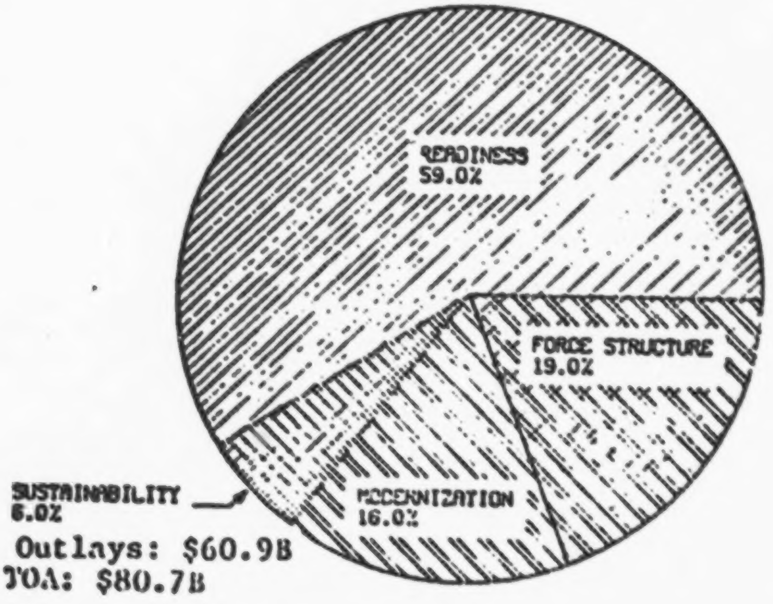
I would strongly urge that no changes be made in our APN account that would reduce the substantial unit cost savings now available.

THE BALANCE BETWEEN OPERATION, MAINTENANCE, READINESS AND SUSTAINABILITY, AND THE INVESTMENT ACCOUNTS

Concurrently with the significant decline in our force structure over the past decade, there was an equally alarming decline in our readiness and sustainability. Much publicity attended reports of large shortages of ammunition, weapons, and maintenance spares. The Reagan supplemental to the 1981 budget and the revision of the fiscal year 1982 budget placed top priority on rapidly recovering from these accumulated deficits. This turnaround has been dramatically achieved. The current budget continues to restore health to our readiness and sustainability accounts. In every category we see continued improvement, building on the 1981 and 1982 appropriations. In some categories, particularly in the maintenance of sufficient quantities of higher technology ammunition and weapons, we would like to see faster growth. But we do view the current program as balanced.

Best Available Copy

U.S. NAVY FY83
MILITARY CAPABILITY COSTS
PROJECTED FY83 OUTLAYS



MANPOWER AND PERSONNEL

The dramatic turn-around of recruiting and the retention of skilled personnel in the Navy and Marine Corps has been one of the most successful developments of the last 12 months. Set in motion by the leadership of this committee in 1980, this success has been built on determined and innovative actions by this Congress and by the Reagan administration, who have followed through on their commitment to bring pay and compensation back to the comparability levels of 1973. This has now been accomplished, and the results have exceeded predictions for manning our expanding Navy. In addition to the monetary changes, there is no doubt that the renewed prestige accorded the military by Congress and the administration, and the support and appreciation of the American public—as well as President Reagan's ambitious rearming of America—have all contributed significantly to the excellent personnel news of the last 12 months.

ENLISTED RECRUITING

In fiscal year 1981, the Navy exceeded its total enlisted accession goal, recruiting 106,322 personnel. For 26 straight months, we have made over 100 percent of quota, and the quality has been steadily increasing. The Marine Corps has exceeded its annual recruiting goal for both fiscal year 1980 and fiscal year 1981. High school graduate accessions remain above 80 percent.

NUCLEAR OFFICER RECRUITING

With high civilian salaries to attract nuclear-trained officers, this community has long suffered from chronic officer shortages. The result has been long and repeated tours at sea. Officer Sea Pay, increased Sub Pay, and increased Nuclear Bonus rates have acted together to reduce resignations by 23 percent during the past year. A number of former nuclear-trained officers have also returned to active duty as a result. We have, therefore, been able to reduce an officer's sea time from 15 to 14 of his first 20 years. We are confident we will eventually be able to achieve a goal of 11 years at sea.

AVIATION OFFICER RETENTION

The most dramatic example of the great savings that the pay initiatives of last year have provided is in aviation officer retention. With a total expenditure of only $33.9 million in fiscal year 1981, and $55.6 million planned in fiscal year 1982, we have been able to reverse the extremely low rates of retention for pilots and naval flight officers. Because it takes $850,000 to train a naval pilot, and $650,000 to train a naval flight officer, the ability to retain experienced aviators during the most useful periods of their careers is very cost effective. In fact, because of the bonus, we have retained over 500 pilots and 125 NFOs that were expected to leave the Navy and Marine Corps. A conservative estimate would suggest a taxpayers' savings of approximately $450 million in training costs during the past 12 months alone. As a result of this positive trend, we can now expect substantial savings in the development and procurement of a new training aircraft, largely because we now have unexpectedly achieved our goal in naval flight officer numbers. We are now able to recommend reprograming money previously planned on maintaining a much higher level of NFO training. Additionally, the retention of skilled and experienced aviators provides an immediate and lasting increase in fleet readiness and combat capability, and a lowered accident rate.

CAN WE AFFORD A 600-SHIP NAVY

The program that we have put forward recommends that Congress face up squarely to the issue of whether we intend to meet our national commitments or not. We have put forward a program that can achieve the minimum force levels, readiness, and manning needed to meet national commitments and to secure peace in this decade and beyond. Most importantly, our program puts forward an optimum strategy for procuring this force at maximum savings to the taxpayer. Unlike traditional patterns in previous 5-year plans, this Department of the Navy program is front-loaded. We are asking Congress to face squarely the issue of obligating funds now which, though large in obligational authority, will be paid out over some 8 years. By courageously facing up to the issue of fully funding two aircraft carriers and the remainder of our $19 billion shipbuilding account, and in fully funding cost-effective production rates in our aircraft procurement account, Congress can break out of the cycle of cost-overruns and deferred cost growth that has plagued defense policy for at least the last decade.

The cost of substantial cuts in these initiatives will be enormous, and they to must be faced. If cuts are made in this program, I believe it may never again be possible to obtain the enthusiasm—and the commitment to competition and investment—that we have now obtained from our shipbuilding and aerospace industry. Unit costs will skyrocket and in the end the taxpayer will pay far more for whatever force size is ultimately established by Congress. Conversely, this committee knows well that even the cancellation of both aircraft carriers, and a halving of the total requested obligational authority for shipbuilding, will provide less than $1 billion of savings to the 1983 budget deficit.

History clearly shows that nothing is more costly than the outbreak of war. That is precisely what I believe we risk in the long run—and possibly in the short run—if the momentum of President Reagan's rearming of America and the restoration of clear maritime superiority is lost through substantial cuts to the 1983 budget.

Senator **Cohen**. Thank you very much, Mr. Secretary. Admiral Hayward, do you have any comments you would like to add?

STATEMENT OF ADM. THOMAS B. HAYWARD, CHIEF OF NAVAL OPERATIONS, DEPARTMENT OF THE NAVY, DEPARTMENT OF DEFENSE

Admiral **Hayward**. Mr. Chairman, I would like to make a point or two for purposes of emphasis. As I reflect upon my last 3 years of testimony before this committee, I would like to remind the committee how well they supported the Navy. It was the House and Senate Armed Services Committees who understood the deficiencies of the Navy programs that had been going on for years and that we forecasted to continue in a trend that was clearly leading us toward insufficiency and, in fact, a second-class status in the world marketplace among nations, among navies.

This committee did so much to understand and support Navy requirements that it would be very troubling indeed if the Congress of the United States, having such a good vision of the issues last year, were this year to not support this major turnaround that has taken place by the administration in projecting a new future for naval balance that will allow the U.S. Navy to regain its position that it so badly needs to do in order to support our national policies.

The committee has done a superb job in the past. I am certainly hopeful that it will continue to support the new programs that are quite in line with the policies and commitment of the Senate Armed Services Committee of the past several years, certainly since I have been testifying. Nothing has really changed that should affect our outlook on what the requirement is. The Soviets certainly have not drawn down their intentions. They have not slowed down their commitment in the construction of naval weapons systems. They continue to outbuild us by at least 1.6 to 1 in major combatants, not small ships but good solid warships. They continue to outbuild us by 4 to 1 annually in submarines. They are outbuilding us 12 to 1 in other things that properly go into making up a navy—and I mean mine warfare craft, oilers, support ships, repair ships, and the like. Their commitment is consistent.

I feel it is terribly important that this Congress maintain the consistency of its past policies, particularly with the support of the Senate Armed Services Committee, to maintain the pressure, recognizing that there are tremendous demands for our taxpayers' money. This is not a year to put off, to wait for another day. It is a year to support the President's commitment.

Thank you, sir.

Senator **Cohen**. Thank you very much, Admiral. General Barrow?

STATEMENT OF GEN. ROBERT H. BARROW, COMMANDANT OF THE MARINE CORPS, DEPARTMENT OF THE NAVY, DEPARTMENT OF DEFENSE

General **Barrow**. Mr. Chairman, thank you very much, sir.

I would like to begin by recognizing my own posture statement. I did not write it, so I can comment favorably upon it. It is the best brief exposition of the usefulness of the amphibious operation that I have seen, and I commend it to you, sir, and particularly to your staff to read it—the first half of it, in any case.

It reminds us once again of the usefulness of the Marine Corps in concert with the Navy. We are instruments of diplomacy by deterrence, and we will fight when we have to in virtually any kind of climate or place.

As I reflect on ground force presence in the world, it exists only in two places—the central region of Europe and Korea—and yet our interests are global, and if we are to express that interest in a military sense anywhere but those two places, it must necessarily be from the sea. Assuming that it is likely to be unfriendly on the other end, it must be forcible entry, and that is the centerpiece of our specialty. It is the way we think. It is the way we train. That is the way we are organized and equipped, and that is what we do best.

It is the most complicated of all operations, being, as it is, sustained from the sea, going from zero on the beach to developing sufficient combat power to accomplish the mission, and involving, as it does, the whole array of various coordination requirements. It can be said that the Navy and Marine Corps, working together, represent a multiservice joint task force, because the Marines are the only service in the world to have an integrated air-ground capability. You add it to the Navy, and you have all of it.

Personally, as I reflect on my many years of service, I believe that we are in a period of such great uncertainty that this happens to be one of the most useful assets that our Nation can have—the capability to go anywhere and do a wide variety of tasks.

Having said that, let me say that for the past 10 years the Marine Corps has been, in a sense, pauperized, kept on the margin or below the margin in terms of sustainability, readiness, and modernization. Starting with last year, our spirits have been lifted. We have been encouraged and we are going to have a major breakout in an enhancement of our capability to fight.

The budget this year is a continuation of that. There are no megabucks in there regarding the Marine Corps. The things that are in there are going to give you a better Marine Corps. We are a bargain, if I may say so. I wholeheartedly encourage the committee, the Congress, to lend full support to this unusual opportunity to modernize the Marine Corps, to improve its sustainability and readiness as it has never been done before.

We used to have a recruiting slogan that says "Nobody likes to fight, but somebody has to know how." We know how, and this budget will give us the means to assure you that we will always succeed.

Thank you, sir.

[The prepared statement of General Barrow follows:]

PREPARED STATEMENT OF GEN. ROBERT H. BARROW, COMMANDANT OF THE MARINE CORPS

Mr. Chairman, distinguished members of the committee, I am pleased and privileged to have this opportunity to express my views on Seapower in general and, in particular, that which is the stock in trade of your Marine Corps, force projection.

We in the Naval Service are gratified by the decision of the administration and the Congress to revitalize this Nation's Naval forces. I am equally gratified with the perception that there is national recognition of the need for strong Naval forces, and that, in great part, is due to increased Congressional encouragement and support. We thank you.

Seapower, the instrument by which a nation influences its destiny through control of the seas, has been, and continues to be a key element of this Nation's military strategy. That strategy, as set forth in the Defense Guidance and with the continuing support of Congress, will return this nation to a position of unquestioned maritime superiority—a position that is vital to the growth, prosperity, and defense of this nation, as well as that of our allies.

Maritime imperatives are not confined to military objectives, but are identified across the entire vista of our national institutions: military, diplomatic, economic,

Best Available Copy

and commercial. The geopolitical realities of our position as leader of the free world, our maritime heritage, and the economic dynamics of our way of life are the raison d'etre of maritime superiority and Seapower.

We are an insular Nation with interests, both economic and political, far distant from our shores. As such, we must be assured free and unthreatened access to the vital sea lines of communication by reason of military and commercial necessity. While free access is not at issue today, the Soviet Union and her proxies threaten that access and are rapidly improving their capabilities to challenge and deny it. We must counter that threat by reestablishing clear maritime superiority and through the decisive application of Seapower, whenever and wherever required.

Beyond the maintenance of free access through the sea lines of communication, our naval forces must possess the means to provide the nation with a credible deterrent capability as well as a potent, flexible, and rapidly responsive offensive capability, should deterrence fail.

A global maritime strategy requires balanced naval forces. These forces must be capable of influencing both the regime of the sea, and of extending that influence ashore for both offensive and defensive purposes. Amphibious forces, the Navy/Marine Corps team, are instruments of diplomacy and deterrence, as well as offensive power projection. Inherent mobility and sustainability permit amphibious forces to concentrate the requisite combat power at the times and places required and then, upon completion of the task, to move on and apply their capabilities elsewhere. A balanced naval strategy provides not only the formidable air power projection capabilities represented in carrier air groups, but also the ground/air projection capabilities which are integral to the amphibious task force.

Naval amphibious task forces represent this nation's most viable forcible entry capability. Indeed, that capability is our most unique and significant contribution to the nation's defense. Our forces can seize and control strategic choke points and entry points, as well as establish advanced bases.

In employing amphibious task forces, theater commanders have at their disposal a flexible and powerful combined arms capability which can either operate independently, or integrate their capabilities with other Service and allied forces for joint/combined endeavors. I am confident you recognize that such global reach and flexibility can take maximum advantage of Soviet vulnerabilities, and are, therefore, vital to our defense.

Amphibious warfare, our fundamental mission, is the most complex among the four combatant functions identified in Title 10 of the U.S. Code. This complexity stems from the fundamental characteristics of amphibious warfare. First, are the complexities associated with launching and supporting our operations almost entirely from the sea. Second, are the considerations attendant with starting from zero, relative to combat power ashore, and the requisite build-up of that power to those levels necessary to the accomplishment of a given mission. Third, is the requirement for the total integration and coordination of effort between the diverse agencies participating. These agencies incorporate every aspect of naval warfare: surface attack, anti-submarine warfare, air combat, assault shipping, and the air-ground components of the landing force, to name just a few. The harmonious combination and application of their capabilities is, I can assure you, a demanding task.

However, the same characteristics which underlie these complexities are the root source of the value, utility, and effectiveness of amphibious operations. Launching our attack from the sea, permits us a degree of mobility and flexibility unattainable with a land-based force. We choose the time and place of the attack and, thereby, enjoy a significant advantage in terms of surprise and our ability to exploit the enemy's vulnerabilities. Moreover, the global reach inherent with seaborne forces creates a significant force multiplier in the strategic equation. By their very presence, amphibious forces post a strategic distraction to our foes. In so doing, we influence his tactical decisions, disrupt his operational capability and flexibility, and divert or constrain his forces. This, in view of the vast littorals he may be compelled to defend, must be regarded among this nation's most valuable strategic assets. And finally, because we initiate and sustain our actions from the sea, we are not bound by the economic and political constraints attendant with basing, over-flight rights, or the need for secure ports. We open our own doors by power projection through forcible entry.

The considerations relative to starting from zero combat power ashore at the initiation of our actions, compel us to organize our forces so as to achieve the optimum composition of capabilities. Then, by the combined and coordinated application of those diverse capabilities, we maximize the synergistic effectiveness of the air-ground, combined-arms teams inherent to all Marine Air-Ground Task Forces

Best Available Copy

(MAGTFs). However, in order to maintain our unique capabilities, an investment is required and, to that end, I will outline just what that investment will produce.

The Marine Corps' programs are directed at enhancement and modernization across the entire spectrum of our unique capabilities. Product improvements and the acquisition of new infantry weapons will increase firepower by 25 percent. Anti-armor capabilities will be enhanced by increasing the current weapons inventory, and the introduction of the MK-19 40mm machine gun and the Mobile Protected Gun System (MPGS). Artillery units are to be strengthened through conversion to the M-198 155mm howitzer, addition of target acquisition batteries, and introduction of precision-guided projectiles. Introduction of the AV-8B will significantly enhance the responsiveness with which we provide close air support to ground units. The Corps' battlefield mobility will be increased markedly with programs such as the Light Armored Vehicle and the High Mobility Multi-Purpose Wheeled Vehicle. Additional mobility enhancements will result when the CH-53E program is complete, and with the initiation of a program to replace the current medium helicopter fleet. Finally, the capability to direct and control Marine Air-Ground Task Forces will be greatly improved through acquisition of the Position Location Reporting System, the Marine Integrated Fire and Air Support System, and the Tactical Air Operations Center.

Navy programs of special interest to the Marine Corps, in addition to aviation programs, are those which are directly related to amphibious warfare: amphibious shipping, Landing Craft Air Cushion (LCAC), naval gunfire, and medical support.

Recognizing that "getting there" is half the fight, the Department of the Navy has established a firm goal: to acquire sufficient amphibious shipping to transport, simultaneously, the Assault Echelon (AE) of a Marine Amphibious Force (MAF) and a Marine Amphibious Brigade (MAB). Attainment of this goal will permit the simultaneous undertaking of two significant amphibious operations in separate areas of the world.

Unfortunately, the total current inventory of amphibious ships, contained in both the active and reserve fleets, falls far short of the MAF(AE) plus MAB requirement, and I am greatly concerned. The attainment of our stated lift objective is, at best, a long-range proposition—and it is threatened by the approachig "block obsolescence" of our current amphibious fleet. All but six of the current inventory of active amphibious ships are scheduled to leave the fleet within the next twenty years. Postponing their orderly replacement invites higher costs and builds rates, and that, just to maintain the status quo. More critically, such delays entertain higher military risks than I consider prudent.

As a result, the Marine Corps maintains high interest in two current shipbuilding programs: LSD-41, for which the first keel (USS *Whidbey Island*) was laid last August; and LHD-1. LSD-41, the first amphibious ship to be started in 5 years and the first to be funded in 10 years, is designed to carry the LCAC, as well as conventional landing craft. We need more of these ships to replace the aging well-deck ships which carry our assault craft. The LHD-1, a conceptual, general purpose amphibious assault ship, is needed to replace our aging LPH-2 Class helicopter assault ships. The LHD-1 will significantly increase our total lift capability, provide a flight deck for both helicopters and VSTOL aircraft, and offer a well-deck for both air cushion and conventional landing craft.

The Navy's LCAC program represents a conceptual and technological breakthrough in ship-to-shore movement. The keen interest the Marine Corps has in this program intensifies as the program continues to develop. The LCAC's capabilities are well known: speed up to fifty knots, sixty ton (or better) payload, extensive operating ranges, accessibility to 70 percent of the world's littorals, and both across-the-beach and inland capability.

Let me turn now to naval gunfire, a deficiency which also concerns me greatly. Naval gunfire provides the primary means of fire support before artillery is established ashore. Presently, there are no new gun or gunfire-related programs in development or production. The 5-inch, semi-active laser guided projectile, in conjunction with the Seafire targeting system, could alleviate some of the problem. In addition, a conceptual 155mm naval gun promises increased range and lethality as well as commonality with Army and Marine Corps ammunition. I strongly support continued exploration of the potential of these systems.

Reactivation of the *Iowa* class battleships will reintroduce major caliber guns now missing from the Fleet. At a cost significantly lower than new construction for a lesser ship, activation of the USS *New Jersey*, along with the three remaining *Iowa* class battleships, will provide massive firepower capability.

Finally, the Fleet Hospital program will provide definitive-care medical facilities in all major medical specialties. It is designed to provide a full range of medical

Best Available Copy

services, within or near the combat zone, for direct support of Navy Fleet units and Fleet Marine Forces. These large, self-contained, portable units will give emergency life-saving care and serve to help in addressing the existing serious shortfalls in Navy medical support. I urgently request congressional support for this vital Navy program.

At this point I would like to address briefly, other programs which improve our capability for rapid response. Pre-positioning programs are designed to enhance our strategic mobility and our capacity to sustain our Marines once employed. While this concept is not a substitute for our capability to conduct amphibious operations or our vital need for increased amphibious lift, it does provide significant enhancement to our ability to deploy rapidly and to stay and fight once we get there.

First, are the Near-Term Pre-positioning Ships (NTPS)/Expanded Near-Term Pre-positioning Ships (ENTPS) and the Maritime Pre-positioning Ships (MPS) programs. Our concern for the nation's ability to move forces rapidly has been central to our planning for reaching the crisis arena expeditiously, ready and equipped to carry out our assigned mission upon arrival. For the Marine Corps, rapid deployment means readiness and on-scene presence with credible, sustainable forces. Such forces complement our amphibious assault forces in deterring conflict, or in successfully concluding operations. Our maritime pre-positioning initiatives are currently tailored to support the deterrence mission within the Southwest Asia (SWA) region but, as the program develops, will be applicable to worldwide contingencies. The Military Sealift Command charters thirteen ships to support the NTPS/ENTPS program for the SWA region. Acquisition and conversion, or new construction, of ships suitable to this mission for three MPS flotillas is essential to the evolution and early operational capability of maritime pre-positioning.

Second, the Marine Corps continues to program resources to pre-position equipment in Central Norway—supplies and ammunition for a MAB in order to expedite NATO reinforcement. Pre-positioning will enhance our commitment to NATO and afford the National Command Authorities the option of committing Marine forces quickly.

Having addressed the programs to enhance our capabilities and readiness, I would like to turn briefly to the glue which holds them all together, our individual Marines. Our ability to deploy rapidly and accomplish our mission, wherever and whenever called, depends on quality individuals who can endure rigorous training, accept firm discipline, respond to sound leadership, and perform with intelligence and adaptability. Our quality has never been better. This continuing emphasis on quality has resulted in lower attrition, fewer disciplinary problems, and progressive improvements in our career force since more highly qualified individuals are eligible to reenlist and are doing so. All this adds up to a ready, motivated, capable force.

In closing, Mr. Chairman, I would reemphasize that the establishment of unquestioned maritime superiority through the decisive application of Seapower, whenever and wherever required, is vital to the growth and protection of this nation's interests and to the interests of world peace. Seapower represents more than control of the oceans. It also represents the capability to project power beyond our shores to places far distanct and often remote. Your Marines provide a wide range of capabilities, but our stock in trade has always been, and continues to be, our capability for forcible entry. In today's world, only two places exist where the United States enjoys force presence on the ground: In the central region of Europe and on the Korean peninsula. At any other location where our presence might be required, we must necessarily start from zero. The programs I have outlined for you today will foster and improve the Marine Corps' capability to open the way through forcible entry. We stand ready now, as always, to provide our unique capabilities in meeting the challenges of tomorrow. Continued Congressional support will provide the means for development and improvement of those capabilities. You may be assured that we will make every endeavor to capitalize on that support. Thank you.

That concludes my statement Mr. Chairman, I am prepared to respond to your questions.

Senator Cohen. Thank you very much, General. Gentlemen, let me say that this is sort of a wrap-up of the subcommittee's work for this year and I wanted to have the opportunity to bring three of the most outstanding witnesses for whom we could hope to come before the committee. Hopefully some more Members will break from their other meetings and come here.

Best Available Copy

I would like, first of all, to associate, myself with Secretary Lehman's remarks about emphasizing the good news. I know there is plenty of bad news to report, and perhaps we will get into some of that in a moment. I have only been a member of this committee since 1979 when I first came to the Senate. There has been a dramatic change just since my brief tenure on this committee, largely due to the leadership shown by Admiral Hayward, certainly, in the Navy and General Barrow in the Marine Corps.

But I can recall, 3 years ago, people asking "is there any need for the Marine Corps any longer?" Things were in pretty desperate circumstances. The Navy was losing people. You, Admiral Hayward, were talking about the hemorrhage that was taking place in the Navy.

In a very brief period of time, this has stopped and has turned around, largely, I think, due again to the leadership, and a change in attitude in this country. There has been a recognition on the part of the American people that we engaged in some rather unwise practices for at least a decade, that we engaged in what has been called, in a sense, global isolationism—the misbegotten notion that somehow we could become a world power by moral example alone while shrinking our presence around the globe.

So I think there is a new attitude, a recovery of confidence, as President Reagan said a year or so ago, and that the period of self-doubt is over. And I would not want to undermine that regaining of confidence that we have experienced in the past several years.

Having said that, we also have to deal with the reality of the budgetary pressures that are on us. I think we are going to come into controversy in several major areas. One will be light carriers versus big carriers. The second will be the battleships; and, I suspect, even the second Trident that will be authorized in this particular budget.

SOVIET NAVAL THREAT

So perhaps I could begin there, Secretary Lehman, and ask you to outline the nature of the threat that you perceive from the Soviet Navy; why in fact you have requested increases this year going beyond the requests of last year's subcommittee. I must say that the Navy has done no more than what this committee requested of you last year. You have added to it in two significant respects—first, aircraft carriers and, second, requesting the second Trident.

But beyond that you have done principally what we asked you to do last year, so this is not some marked, significant shift in emphasis on your part. We are the ones who were working with you last year, saying this is the direction you have to go. You have gone one step further in seeking to save money by going to multi-procurement programs.

But I think that is the issue we have to address—why the two aircraft carriers now? Do we have to have two now? One member has said, and I assume will say it again, "You could have bought one fur coat but you bought two because there is a sale on." Well, is there a need? Is there a need to have two, and, if so, why?

Why don't you begin there.

Secretary **Lehman**. Yes, Mr. Chairman. The previous program that we discussed a year ago also included two nuclear aircraft carriers. It had one in 1983 and one in 1986, because we have two frontline carriers today that are virtually my own age. The *Midway* and the *Coral Sea* are World War II designs; one is 35 years old and the other is 37 years old. We hope to operate both of them to about 45 years, which is not a bad investment and payoff for the taxpayer. Nevertheless, at 45 years they are going to have to be replaced just to stay even with where we are today.

The two carriers in this budget will take us to 14 carriers for a while and then back down to 13, assuming both of these CVN's are procured. To grow beyond 14 CV's we are going to have to procure more aircraft carriers later.

Our present carrier force, as you know, even the *Forrestal* class, were delivered in the Eisenhower administration. The *Enterprise* and *Kennedy* and earlier carriers are all over 20 years old. So just to stay even we have got to buy aircraft carriers, but we cannot stay even and meet the treaty commitments that address the vital interests that we have. We must expand the force.

There are legitimate arguments regarding the best way to provide a force that can deal with the threat, by using the *Nimitz* design or some smaller carrier design. I have seen a copy of a letter sent by Senator Hart proposing a 40,000-ton alternative—two 40,000-ton ships. If we were to substitute two 40,000-ton oil burning ships, the life-cycle cost for those two ships would be more expensive than the life-cycle cost of the nuclear-powered *Nimitz*. I also believe that we can demonstrate that a force centered on a 40,000-ton carrier is a less war-fighting capable force and a more vulnerable force. We cannot afford the luxury of buying ships that carry such an expensive payload and have them be expendable ships, ships we can afford to lose.

We never lost a large aircraft carrier to enemy action in World War II. All of the four carrier losses that we suffered were less than 30,000-tons displacement. A 40,000-ton carrier simply cannot be protected against the latest versions of the cruise missiles, the 30-degree divers, sea skimmers, and supersonic missiles with very large, shaped-charge and other conventional warheads, as well as the threat from torpedos.

A 40,000-ton ship simply cannot afford, because of the volume available to it, the kind of armorplating and protection necessary to absorb that kind of kinetic energy. Nor can it adequately protect its magazine and protect its payload, which is its air wing, and still keep fighting against that type of threat.

So two small, 40,000-ton carriers would be a more vulnerable force by every study, by every analysis, than one *Nimitz* class carrier. To give it even a chance to survive against the force the Soviets can deploy, one would have to double the number of *Aegis* cruisers that would provide the area air defense for such a dispersed force, thus driving the cost higher.

For each of those 40,000-ton carriers an additional fleet oiler would have to be procured and operated for the entire lifetime. So while certainly one can, and we have in the past and would in the future, happily operate 40,000-ton aircraft carriers, there is no mission to justify it. It is a much more expensive way to provide the air power necessary than a force built around a *Nimitz* class carrier.

So I applaud Senator Hart's support of the need to get more sea-based air to sea, but I believe that his proposal is a gold-plated way to do it, an expensive way to do it, and a less survivable way to do it than the program we have put forward.

Senator COHEN. What about the LHDX?

Secretary LEHMAN. I believe the LHD-1 is a very air-capable platform of the size proposed by Senator Hart. Senator Hart wants to make the 40,000-ton ship capable of using the F-14, A-6, A-7, and F/A-18 conventional aircraft, whereas we have made the LHD-1 a VSTOL carrier. We believe that while the LHD-1 is first and foremost an amphibious ship, which we will improve over the LHA design, to be able to operate new surface effects landing craft, it is convertible to a full-up 36-aircraft air wing, deploying VSTOL carrier. It will be capable of operating antisubmarine helicopters, AV-8 harriers, and subsequent VSTOL aircraft for which we are now putting money up front to develop. It is a good class of ship. It is a cost-effective means to increase the number of aircraft carriers in a way that we can afford, after we obtain and maintain at least 15 large deck CV's.

BATTLESHIPS

Senator COHEN. Let me go back to battleships. How are we coming on battleships?

Secretary LEHMAN. I was very pleased to report that Saturday a week ago we were able to bring *New Jersey* out of drydock a week early. It is literally a week ahead of schedule, according to our master plan. Things are going well. We have very tight concurrent deadlines to make on the weapons system, including the armored box launcher, the Tomahawk fire control system, and the power sources. We are putting entirely new electrical power systems into the ship. All of the guns are reactivated and in excellent condition. She is coming along right on cost and we are confident at this point, with a little knocking on wood, that we will deliver her to join the fleet as promised on time and on cost in January.

Senator COHEN. Do you recall the pledge you made a year ago, signed in blood, that you would in effect have it on time and on cost?

Secretary LEHMAN. Yes, sir.

Senator COHEN. Are you prepared to make that same pledge this year?

Secretary LEHMAN. I am indeed, as of the latest information available to me. Yes, sir, we will deliver that ship on time and on cost.

Senator COHEN. Staff wants to know if you would make the same kind of pledge on the next one too.

Secretary LEHMAN. On the *Iowa*?

Senator COHEN. On the *Iowa*. How much blood do you have to go around?

Secretary LEHMAN. I will after we select a source. Yes, I would be prepared to make that pledge.

As you know, we are putting this ship, the *Iowa,* into the private sector and we have bids now from a significant number of shipyards. It will be the most ambitious private job done in the private sector in many, many years, and when we finish the evaluation I am confident I will make a similar pledge for the same delivery.

It is most important that we maintain the annual flow of these four ships to keep together the expertise, the engineering talent, and the lessons learned by the design engineers and the actual ship overhaul and repair trades that are actually working on the first of these ships. We need to go right into *Missouri,* on the west coast as *New Jersey* finishes her shakedown, with the same team, both private and public sector, available. Then we must go from *Iowa* into *Wisconsin* on the same rough timeframe, each separated by a year, to keep that body of experience and knowledge intact until we get all four into the fleet.

AIRLIFT

Senator **Cohen**. Let me just shift to airlift for a moment. What is your most pressing need in airlift? Is it outsize, oversize, is it bulk cargo? Medium and short term?

General **Barrow**. Not so much size as sufficiency is our biggest problem, the adequacy of airlift aircraft. There is enormous competition from the Army, Air Force, and Marine Corps for airlift assets to go to the conflict. The competing requirements are such, that there is just a serious deficiency in airlift.

The Army has more of a sizing problem than we do. We have what we call an air echelon that goes in carrying primarily people and some equipment associated with the air part of our amphibious operation. It is not outsize. That is not the problem. It is whether we would have the available aircraft to do the job.

Senator **Cohen**. That is what we are concerned about as well, whether it is outsize or oversize, and what aircraft we should authorize for procurement.

As you know, there is going to be debate as to whether to go to 747's, at least 10 of which could currently be purchased and converted, to use them for carrying bulk cargo. There is going to be another question raised as to whether or not we ought to go to KC-10's or the C-5 aircraft.

What is the competition? What is the tradeoff? You can buy some aircraft right now. If you do not go to outsize airlift, then obviously it is a problem, especially if you are dealing with a 747, and if you are dealing with equipment that has to be assembled and disassembled. But I do not know yet what the committee will do to resolve the issue.

We all know there is a deficiency in airlift. I have yet to find any consensus in the search for a solution. We will need to know whether your near-term requirement would be better satisfied by going to the conversion of the 747's or more KC-10's or more C-5's.

General **Barrow**. I would not want to mislead the committee when I spoke about sizing. We too have a problem, but it is not as serious as with the Army. We are very interested in airlift in the Marine Corps and not only as it relates to conventional amphibious operations, but we also keep units on air alert in all of our three major formations, subject to being called out on short notice.

I would simply say, Senator, that this whole business of strategic mobility, whether we are talking about sealift or airlift, has to be one of the most serious problems that defense faces, and that is how to get to where we want to go.

Senator COHEN. Yes, sir. Senator Byrd?

Senator BYRD. I would like to say that I feel the Secretary made an excellent presentation today of the Navy's needs, particularly in regard to the two nuclear carriers.

Mr. Secretary, you made an observation that I would like in a moment to have Admiral Hayward comment on. You said that two carriers are more vulnerable than one. Two small carriers are more vulnerable than one large carrier, nuclear carrier.

Now around this table so many times I have heard one of more of our colleagues say that by having more carriers and dispersing those carriers, Admiral Hayward, they would be less vulnerable than having a smaller number of larger carriers. I wonder if you would give us your professional military judgment in that regard, Admiral Hayward.

Admiral HAYWARD. The term "vulnerability," I believe, creates some of the difficulty. It is interpreted differently by different audiences. Let's start with the detection of the ship and then go on through to the damage which the ship would be able to sustain and still continue flight operations and continue attacking and so forth.

Then you get to the relative balance between the investment as to whether you want one or two. Let's remember that you do not get two for the price of one, despite what one commonly hears. In fact, I hear it frequently that you get three for the price of one, and that is too simplistic a way to examine it. You might get three for the price of two, but it is not three for one and it is not even two for one when you count in the price of the airplanes that must go with it and the rest of the battle group that you form up in order to go, as the chairman very properly said earlier, in harm's way.

We build aircraft carriers and put with other types of warships to do specific tasks, and those tasks are tough. We want a ship that can survive and operate in a tough environment.

The aircraft carrier is the nucleus of the battle group which is a combination of ships. It includes the cruisers, destroyers, and submarines that make up the remaining elements of the battle group. It depends on the scenario, but basically it is a powerful aggregation of warships and aircraft.

As I said in my statement before the full committee, when you buy an aircraft carrier you are buying the volume of the ship, you are buying square feet of deck. The ship does not fire anything. It is what flies off the ship that carries the power. What you are looking for is maximizing a given investment. The ship has to be able to survive or be less vulnerable or be basically invulnerable in order that it can be operable in the environment that we classify as in harm's way.

The big carrier can be constructed. We know how to do it in such a way that it can absorb a large number of torpedoes or guided missiles and still conduct combat operations. The smaller the carrier, the less ability is inherent in that design. When you get down to 40,000 tons and below, you are sacrificing survivability.

In terms of detection of the force, it really is irrelevant between 40,000 tons and 90,000 tons. A 40,000-ton ship is almost 1,000 feet long. A 90,000-ton carrier is 1,000 feet long. They are both still big warships. They can be located and they can be targeted.

Our entire investment in the countering of that threat is to nullify the targeting complex so that it cannot specifically identify any warships. We have a good investment program to do that. We jam radars and communications systems. We jam the missiles themselves in order to keep these ships operating and surviving.

The most survivable warship is going to be the biggest one we can build, not the smallest one we can build. What you get in small size is distribution, which is an advantage, and you want that if you can get it for the same price. If we could get 3 for 1, the argument would start to get more interesting to the professional naval officer, but you do not get three for one.

What you sacrifice in the process for the same amount of dollars is fire power from that carrier. We will get more than twice the offensive striking power in one nuclear carrier than we will get in both of the 40,000-ton carriers because of the deck space and the mix of airplanes that we put on it in order to get the job done.

It is a relative balance of elements that we must take into account as to which is the better buy, and we all get wrapped up in the cost rather than the cost-effectiveness of the force. The big carrier is built to sustain damage while continuing to operate. The smaller the carrier gets the less it can do and it is not a direct linear relationship, even at that.

A 40,000-ton carrier is going to be able to take some hits, but for a given investment you will not be able to put as many other ships with it. Therefore, the ability to go into harm's way is going to be restrained and if you are going to have a sufficient force to go into the same environment you are going to have to add more other ships with the smaller carrier.

I have tried to make this point before. People generally look at a battle group at sea the way it appears in the newspapers, which is done for public affairs purposes. You envision the beautiful carrier surrounded by cruisers and destroyers and most people think that is the way they fight. That is not the way they fight at all.

We would have two or three carriers generally in an area of a couple of hundred miles and interspersed in that area of 200 to 300 miles of radius are going to be a number of other warships designed in their totality to present a very formidable offensive capability. The battle group is not at sea to defend itself. It is at sea to destroy the enemy. Therefore, the commander is going to put whatever ships he needs out there to do that job.

If we have to go into, let's say, the Mediterranean, and we want to put four carriers there along with the associated *Aegis* cruisers and the antisubmarine ships and our own antisubmarine submarines and our patrol planes for support then we are going to put three to four carriers, hopefully, in there. If we only have small carriers, we are going to have to have five or six or seven to do the same job.

You are not going to buy the five, six, or seven for the same price that you can the four. That is where our views diverge on this small versus large mix. If we have 15 or 16 large carriers of the type we seek in this budget, and then you said you would provide a half dozen or more smaller carriers, we would consider that to be a good mix of carrier force structure to go in to our Navy force.

That would not be troublesome, to, I think, any CNO. It would not be to me and I do not think it would be to my successor or any others with whom I have professionally discussed this issue. It is when you get down to numbers like 12 where we are now, and you talk about adding incrementally one or two more ships that the smaller ship is unattractive.

You have got to get up to around 15 or 16 before the smaller carrier begins to be an acceptable alternative and an attractive way to distribute the force because only then do you have the capability of going to areas where there is less threat and still be able to operate our Navy effectively.

A very lengthy answer but I hope I have adequately explained it.

Senator **Cohen**. The gentlemen's time has expired. [Laughter.]

Senator **Byrd**. Well, the detectability of the small carrier is approximately the same as the larger carrier, I take it.

Admiral **Hayward**. Technology is going to make it possible to detect a mine craft as easily as a 90,000-ton ship. Likewise, technology must be employed by us to counter that capability so that one cannot do that easily, so that in a tactical environment we can destroy the enemy who is trying to target us.

We seek to confuse the enemy through accomplished electronics. We have a good, sizable investment in that capability in the Navy, so as to make many ships look alike. We can confuse the enemy radars or electronic devices to misjudge which ship is the target they are seeking, or we can force them to come so close to the formation in order to try to discriminate that they will come into our environment where we are able to overwhelm them with power and destroy the threat platform before it even gets a chance to launch its weapons. That is our basic investment strategy.

Senator **Byrd**. I am not sure that totally answers what I was concerned about. Am I correct in assuming that a small carrier, a 40,000-ton carrier, can be detected with approximately the same ease or difficulty, as the case might be, as would a large carrier?

Admiral **Hayward**. Yes, sir. The answer to that is yes.

Senator **Byrd**. Now you mentioned the word "invulnerable." I do not suppose anything is invulnerable.

Admiral **Hayward**. We do not consider anything to be invulnerable. Therefore, we want it to be able to take punishment and still fight.

Senator **Byrd**. But insofar as invulnerability is concerned, in associating it with a Navy warship, the large carrier is as invulnerable as anything can be made invulnerable. Is that what you say?

Admiral **Hayward**. I would agree with that.

LHDX

Senator **Byrd**. General Barrow, what is your opinion on the dual role of the LHDX? Are you satisfied with this proposal?

General **Barrow**. I think that it extends the usefulness of the ship. The Secretary has already said quite properly that its primary mission is to be amphibious. It is a very versatile amphibious ship and there would be times, even in certain amphibious operations, that we may choose to put VSTOL Harrier aircraft aboard and those other occasions when some specialized requirement exists to make it an all VSTOL carrier, or helicopters for whatever role that might be.

I think it tends to make that ship even more useful than it otherwise might be, so I am for that.

Senator **Byrd**. I may have some other questions later, but that is all right now.

Senator **Cohen**. Let me come back, Admiral, to the light carrier again. I understand from your testimony you say that you do not have enough big carriers to do the job now. You do not have enough even with those two carriers to fulfill the missions you have now. Is that right?

Senator **Byrd**. That is our assessment. Yes, sir. We believe that we should have 15 or 16 in order to be able to comfortably tell you and the President that we can handle what you are asking us to do.

Senator **Cohen**. Now, one of the major arguments for light carriers is that the light carriers will not be put out where big decks ordinarily go, but could be put in lower threat areas. Therefore, you do not have the same sort of vulnerability where the threat is reduced.

Now the question I would have is can the LHDX be used in such a way as to essentially fulfill a light carrier mission in a lower threat area, assuming you are not using it for amphibious purposes? Could it be configured in such a way that you are using it to fulfill essentially the same mission in a lower threat area by equipping it with, let's say, Harriers?

Admiral **Hayward**. Your assumption is very important because it is primarily an amphibious lift warship.

Senator **Cohen**. The reason I am asking it that way is because the other argument is that we have a light carrier. You can put it down in the Caribbean, someplace where we are not likely to see as many Soviet nuclear subs as you might see up in the Med or in the Indian Ocean.

Therefore, it will serve the function of a light carrier without the threat to a light carrier that it otherwise would face in the Indian Ocean. That is one argument and it may or may not be valid.

The second thing that occurs to me, however, is this: If you have an LHDX, which is a 40,000-ton ship, which is the basic tonnage we are talking about for the light carrier, but configure it in such a way that it has Harriers, which again have a limited role, and will not match an F-14, F-18, can it serve the essential function that the light carrier could serve in a low-threat area?

Is there a marginal difference between the LHDX and the light carrier in terms of missions in a lower threat area?

Admiral **Hayward**. Not significantly. The reason we are so attracted to using the LHD-1 as an air-capable light carrier alternative is because it is able to be employed as you suggested. It would be, particularly if it were alone, in an environment where there would not be a very significant air threat.

In fact you would use it for the purpose of using the AV-8 attack capability in a low-threat area or a much lesser threat area. But you could also combine that capability with a battle group or several battle groups to augment the landing om amphibious forces where you want to maximize your assault capability. You do not want to leave the AV-8 back home and then have to go get them.

Here is a chance to take them into the fray, to be part of that assault force and be prepared to move them ashore as quickly as possible. There is a wide variety of possibilities that the ship design has in it, and we will make it capable of that wide variety of air functions.

Senator **Cohen**. I would like to cut the Gordian knot which binds the big carrier/little carrier argument. We have something which is not exactly what some would like in terms of the light carrier, but it might be enough. It might give us not the same, but nearly the same kind of capability in a low-threat area and it could be converted into an amphibious assault capability in the Indian Ocean, should we have to have access to unfriendly shores and so forth.

And I am really trying to find out is whether there is a plausible way of coming out somewhere in-between, recognizing that we do have to have big decks but there is a role and a mission for a lighter, smaller ship which will fulfill a mission that is not exactly the same but also not too different. That is really the nature of my question.

Admiral **Hayward**. Well, I think your question itself answers why we have gone this way. It provides us considerable opportunity to use the ship in a variety of different scenarios, one of which would be somewhat similar to the light carrier argument.

The Commandant might want to embellish on that.

General **Barrow**. No.

TAH HOSPITAL SHIP

Senator **Cohen**. Secretary Lehman, the bells have rung. Let me ask you a couple of quick questions on TAH, and the priority to get the hospital ship in fiscal year 1983.

Secretary **Lehman**. I think it is one of our highest priority programs to get that ship going and get it deployable as soon as possible. As you know, we have been able to recommend a reprograming of fiscal year 1982 funds to get some fleet hospital capability out to the potential RDF deployment areas because of the success of the TAKX program so far. That is an interim solution, but we must get a deploying hospital ship out without delay.

Senator **Cohen**. Do you think we can justify the 2,000-bed requirement?

Secretary **Lehman**. Yes indeed, I believe so. The Commandant may like to speak to that as well.

General **Barrow**. There is no question about it. Even in a benign scenario, the requirement is well beyond 2,000. There is a surge requirement for hospital quality care which must be met within the first few days of combat. The only way to have an instant hospital to meet this surge requirement is to have it arrive on the scene ready to do business. A dedicated afloat capability permits us to do just that. Hospital ships, coupled with the fleet hospitals and other medical assets—RDMF, CRTS and organic Marine Corps medical units—are necessary programs if we are to approach fulfilling these critical requirements.

I suppose maybe these critical requirements are transcendent in importance because we are talking about saving lives and right now we are woefully deficient, and if we went to war tomorrow they are an area that would be of great concern to me and my commanders and all who would engage in it.

Senator **Cohen**. One final question. The charter, Mr. Secretary, that program is still in limbo at this time. Could we have your justification for going to the convert and charter approach with respect to maritime pre-positioning?

Secretary **Lehman**. Yes. With respect to the TAKX program, we have received numerous industry responses. We have had some 56 proposals submitted and, while I do not want to discuss details in open session what might be proprietary, we think that—without question the committee will be very pleased with the results of that competition.

Our hopes for not only cost savings over the option of procurement but also a definite earlier provision for three MAB's worth of lift will be realized. We will have a very successful program and we should be able to brief the committee on this in the not too distant future.

Senator **Cohen**. Senator Byrd, do you have another question?

CONTRACTING CARRIER COST ESTIMATES

Senator **Byrd**. Yes. Mr. Secretary, it has been testified by the Navy that by contracting for two carriers at the present time that the cost savings would be roughly $750 million—$754 million. Now have you or your staff met with GAO representatives to discuss the Navy's estimates of cost savings on the two-carrier buy and, if so, what did the GAO representatives have to say about your estimate of savings?

Secretary **Lehman**. Well, we have met. We have spent a great deal of time with the GAO investigators over the last couple of months and I understand they spent a good deal of time down at Newport News going over their figures and discussions as well. We have provided them complete access to all of our data and I understand Newport News has done the same. We have not seen the results of their investigations, but I am personally confident that they will bear out the projections that we have made for the cost savings to the taxpayer. I look forward to seeing their report once they get it to Congress.

Senator **Byrd**. And that report will be forthcoming rather soon, will it?

Secretary **Lehman**. I think it is due this month.

Senator **Cohen**. We are told it will be delivered by the 29th.

Senator **Byrd**. And you are confident in your own mind that the Navy's figure is a realistic and sound figure?

Secretary Lehman. My estimation is that we erred on the side of being conservative in the amount of the cost savings. In other words, I suspect that the savings will end up being more.

Senator Byrd. Thank you.

Senator Cohen. Gentleman, thank you very much. We will hold the record open until 5 for any other Senators who might have questions and request, if you could, put the top priority that you can on getting answers because we are going to mark up tomorrow.

[Questions with answers supplied follow:]

Questions Submitted by Senator William S. Cohen

MATERIALS DEVELOPMENT PROGRAM

Senator Cohen. Does the Navy have a meaningful and innovative near-term materials development program for shipbuilding and other Naval applications?

Admiral Hayward. The Navy's shipbuilding near-term materials development program is generally organized into three major thrust areas: Performance Enhancement; Survivability Improvement; and Life Cycle Cost Reduction.

Technology application areas include, but are not limited to: Development of new materials and concepts for ship construction; Advanced propulsion materials; Fire resistant materials; Fabrication methods; Technology for corrosion control and fouling control; Development of new lightweight, high strength materials for future submarine construction; and Development of technology required to improve quietness, performance and maintainability of surface ship and submarine machinery through advances in improved bearings, seals, lubricants and lubricating processes.

Interactions are maintained among the various Navy laboratories, industry, other military services and foreign navies to remain informed on the state-of-the-art and to enhance technology transfer to the Fleet.

Liaison with the Fleet is maintained in order that, when an identified need exists, development effort is exerted to resolve current Fleet problems.

With regard to aircraft and missiles, the Naval Air Systems Command has strong and meaningful materials development programs. They include application of rapid solidification technology to reduce the dependence on strategic materials; development of advanced metal and resin matrix composites to increase strength and reliability of aircraft while reducing weight and decreasing fuel consumption; development of new, high-strength materials directed toward improving the durability of aircraft engines; and finally, development of new, corrosion resistant materials to improve the environmental resistance of aircraft, and to reduce costly maintenance.

SHIPBUILDING

Senator Cohen. Why is the Navy not doing more in developing composites for shipbuilding and other Navy applications?

Admiral Hayward. The Navy is making extensive use of fiber reinforced composite materials in aircraft application, including wing and empennage structure on the F/A-18 and AV-8B and in fuselage panels on the SH-60B. Also, composites have been very successfully applied to rotor blades for the CH-46 helicopter. A substantial technology base program is also in place devoted to gaining a capability for even more extensive and efficient use of these materials as well as seeking further improvements in the material systems for high temperature application.

Due to the confined environment characteristic of Navy ships, requirements for composite materials performance are generally severe, and must satisfy factors such as fire resistance, toxicity, smoke, environmental degradation, etc.

Thus, for a composite materials development program to be of use in shipbuilding, a major development effort, including the above factors and not necessarily bound by conventional metallic design approaches, must be undertaken. Current funding does not permit this.

Senator Cohen. What is the Navy's funding profile for these programs?

Admiral Hayward. The Navy funding profile for composite materials is as follows:

[In thousands of dollars]

	Fiscal year—				
	1981	1982	1983	1984	1985
Organic matrix	$545	$900	$900	$1,000	$1,100
Metal matrix	5,421	5,747	6,252	6,800	7,000

DEEP DIVING SUBMARINES

Senator COHEN. What is the Navy doing to give us a deep diving submarine capability? What is the Navy's funding profile for this program?

Admiral HAYWARD. The Navy has developed an improved steel alloy, HY-130, to the point of at sea evaluation. This steel would allow [deleted] feet operating depths. A Deep Components program is working on hull fittings necessary to support such a capability. In addition to titanium program has made advances in titanium welding technology and preliminary investigations of the materials characteristics of titanium alloys. However, to complete this effort to the point where titanium would meet the safety and reliability standards required of U.S. submarine hull would [deleted] cost up to $2 billion.

The funding profile for this program is as follows:

[In millions of dollars]

	Fiscal year—					
	1982	1983	1984	1985	1986	1987
HY-130	$1.0	([1])	([1])	([1])	([1])	([1])
Deep components	5.7	$2.0	$6.5	$2.8	$5.9	$6.2
Titanium-100	2.8	.5	.5	.7	2.6	2.6

[1] Program completed.

Senator COHEN. The committee will stand adjourned.

[Whereupon, at 3:12 p.m., the subcommittee adjourned, to reconvene at the call of the Chair.]

INDEX

A

Page

- AAW:
  - Mission area 3800
  - Program 3802
- Advanced command data systems 3820
- Aegis 3802, 3824
- Agreements, signed 3742
- Air Force:
  - Other procurement 3990, 3993, 3994
  - Position on 10 million ton-miles per day 3995
- Air-launched ASUW/strike weapons 3808
- Airborne mine countermeasures 3819
- Aircraft:
  - 747 3974, 3999, 4000, 4003, 4004, 4005, 4006, 4015, 4020, 4025, 4026
    - Outsize, STOL capability 3997
  - 747, C-5, C-17, DC-10 cost comparison charts 3986
  - Acquisition program decision tree 3979
  - Carriers 3957
    - Procurement schedule 4082
    - Program 3956
  - Procurement history 3607
- Airlift 4096
  - Agreements, allied cooperative 3989
  - Augmentation decision 3754
  - Augmentation plan 3967
  - Availability comparison 3983
  - Capability 3969
  - Enhancement, ad hoc committee 3995
  - Programs 3959
  - Sealift and pre-positioning 3960
- Amphibious:
  - Assault ship LHD-1 3870
  - Assault vehicles 3661
  - Forces 3788
  - Lift 3708
  - Lift fingerprints 3898
  - Ship block 3868
  - Ships 3711
- AMRAAM 3806
- Antiarmor and tactical mobility 3661
- Antijam communications 3819
- Antiship torpedo weapons 3808
- Antisubmarine warfare programs 4033
- ARAPAHO 3827
- Armored box launchers 3785
- Army:
  - Force structure 3881, 3883
  - High technology test bed (HTTB) 3884
  - Light armored vehicles program 3886
  - Requirements 3884
- Attack submarine program 4041
- Aviation officer recruiting 4087

B

Page

- B-747:
  - Download 3998
  - Operation at Pope AFB, N.C 3997
  - Runway requirements 3997
- Balancing act, U.S. forces 3603
- Baltic maneuvers 3561
- Bare base system 3992
- Battle group, the 3799
- Battle group anti-air warfare coordination (BGAAWC) 3803
- Battleships 4095
- Budget:
  - Choices 3599
  - Trends in U.S. defense and naval 3557
- Budgetary considerations 3767

C

- C-5 4000, 4001, 4005, 4006, 4007, 4008, 4013, 4014, 4016, 4017, 4018, 4019, 4025, 4030, 4031
  - And B-747F 3996
  - And KC-10 3753
  - And C-141 3740
  - Audit report 4016
  - Use on smaller airfields 4000
  - Versus C-17 3996
- C-5, DC-10, and B-747 comparison, weight cube capacity 4000
- C-5B 3985
  - Versus C-17 3982
- C-17/C-5B 3971
- C-141 4017
- Carrier battle groups 3607, 3771, 3955
  - Goal 3844
- Carrier cost estimates, contracting 4102
- Captor 3811
- Cargo ship resources, Dry, U.S 3852
- Charter and convert 3861, 3892
- Chemical capability 3761
- Chemical warfare 3570
- Civil Reserve Air Fleet 3973
- Civilian manpower 3620
- Combat service support 3662
- Command and control 3809
- Command, control, and communications 3662
- Commercial aircraft, new or used 3965
- Composite guided missile—cruisers and destroyers 3772, 3812
- Communications jamming 3583
- Contract options, expiration of 3976
- Contracting 4081
- Congressional interest topics 3781, 3782
- Congressionally mandated mobility study (CMMS) 3995
- Cost growth escalation 3874
- CRAF program 3974
  - Enhancing 3975
- Cruise missiles, antiship 3584
- CTOL carrier aviation 3583
- CTOL, VSTOL, relevant studies 3914
- Cuban military power base 3590
- CV:
  - Landing mishap rates/10,000 landings 3954
  - Variables 3915
  - War at sea 3836
- CVN:
  - Acquisition strategy 3611

CVN—Continued .... Page
  Multiship delivery plan 3929
CVN-71 milestones 3929
CVN-71, CVN-72, CVN-73, improved delivery 3928
CVN-72 and 73 3927
  Multiship acquisition 3930
C-X 3983

D

DDG-51 3778
  Design 3812
DDGX 3775
  Navy disagreements on 3779
Data transmission 3820
Defense budget:
  As percent of GNP 3558
  National priorities 3596
Defense spending 3557
Des Moines class cruisers 3786
Diego Garcia:
  Milcon funding 3738
  Status of 3737
Diesel engines:
  American-built 3900
  Slow speed 3900

E

Egyptian reluctancy to written agreement 3765
Electronic warfare 3803
Electronics, advanced 3706

F

FFG-7 .... 3703, 3788
  For Naval Reserve 3791
F-14 engine 3591
  Reengining plan 3575
  Shortcomings 3574
Facilities access agreements 3766
Fleet, 600-ship Navy target 3842
Fleet by ship type: 1970-90 3686
Fleet oiler, TAO, 187 class 3814
Force projection:
  Capabilities and programs 3849
  Derived from airlift 3964
Force structure:
  Overview, planning future 3596
  Planning 3615
  SCN aspects of 3616
Forces, U.S., commitment of 3763
Foreign registry U.S.-controlled fleet 3900
Forger operations 3583
Forrestal class carrier 3843
Forward operating element 3759
Four-service command 3757

G

Graduate fellowship program 3710
Grant program 3721, 3722
Greek Government attitude toward Soviets 3573
Guided missile frigate—FG-7 class 3814
Gun, 155mm 3897
Gun weapon systems 3809

H

Page
Hardware, alternatives in utilization of existing ... 3963
Harpoon antiship cruise missiles ... 3807
Hospital ships ... 3814, 3893, 4101

I

Improved Sparrow ... 3805
Indian Ocean, logistical, support of Naval forces ... 3766
Infantry battalion enhancement programs ... 3660
Infantry units in open terrain ... 3902
Internal subversion ... 3743
International agreements, enforcement of ... 3765
Iran ... 3582
  Capabilities against a Soviet invasion ... 3758
Israeli security, insure ... 3720

K

KC-10 ... 3970, 4001, 4005, 4030
  Advance procurement ... 3996
  In multiyear contracts ... 3996

L

LAMPS MK III ... 3574, 4063
  Cost growth ... 4061
LCAC engines ... 3895
LHD-1 ... 3865, 3894
  Bottom line, Navy view ... 3923
  Inboard profile ... 3921
  Procurement acceleration ... 3958
  Program ... 3871
  Proposed future direction ... 3924
LHDX ... 4099
Landing ship dock LSD-41 ... 3869, 3871
Lexington (AVT-16) ... 3956
Light armored vehicle (LAV) ... 3708, 3872
  Priority ... 3901
  Program options ... 3902
  Specifications ... 3873
  Squad carrier ... 3887
  Variants ... 3885

M

MK-48 torpedo ... 4073
MK-86 improvement ... 3822
MK-92 fire control system ... 3803
MSC sealift ... 3853
MSH R&D funding ... 3673
Man-machine technology ... 3818
Manpower and personnel ... 4086
Manpower systems R&D ... 3817
Marine amphibious force ... 3889
  Lift requirements ... 3891
Marine Corps:
  Advanced manpower/training system ... 3711, 3821
  Programs ... 3660
Marine forces in open terrain ... 3901
Maritime:
  Capabilities ... 3599, 3685
  Superiority ... 3712
Materials development program ... 4103
Mechanized division ... 4009
Medical R&D ... 3816
Medium-depth mines ... 3797

	Page
Memorandum of Understanding, status of	3744
Merchant Marine:	
Fleet, U.S.	3899, 3900
Ships, U.S.-flag	3901
Merchant ships	3542
Military:	
Capabilities to achieve adequate force projection	3964
Convoys	3789
Equipment, procuring	3975
Manpower	3618
Mine(s)	3672, 3709
Countermeasures, influence	3822
Countermeasures ships	3774, 3811
Warfare forces	3810
Minehunter	3705
Missile sensors	3823
Missiles and other weapons	3769
Mission priorities	3758
Mobile protected gun (MPG) near-term organization	3882

N

National strategy, battle groups needed	4084
Naval:	
Capabilities, funding of	3604
Diplomacy, forceful	3564
Guns	3821
Gunfire	3871
Gunfire support	3865, 3896
Reserve force structure	3616
Navy:	
Can we afford a 600-ship	4087
Energy program, advanced	3825
Fleet ship count	3602, 3694
Military capability costs, U.S	4086
Overcommitment of	3760
Program overview	3593
Program, special interest	3664
Satellites, threat to	3579
Ship force levels, U.S	4084
Shipbuilding	3626
Swing strategy	3578
The kind we have	3601
Threat assessment	3543
Today	3606
New threat upgrade (NTU)	3804
Nonnuclear propulsion	3705
Nuclear:	
Aircraft carriers, multiship procurement	4085
Attack submarine force levels	4039, 4060
Officer recruiting	4086
Submarines	3844

O

Ocean Venture 1981	3831, 3832
Oscar, sinking an	3580
Outlays	3931
Outsize capable cargo aircraft, need for	4002

P

P-3C Orion	4047, 4051
Pay and benefits package	3961
Persian Gulf oil	3747
Petty officer shortfall	3612
Phoenix	3805
Political impact of oil cutoff	3590

Page

Posture statement, DNI 3565
Pre-positioning:
  Force 3859
  Ships 3860
Procurement appropriation, fiscal year 1983 3991
Propulsion R&D 3815

Q

Quickstrike 3811

R

Radar:
  Phased array 3790, 3791
  Surveillence equipment/new threat upgrade 3822
Rapid Deployment Force:
  Budget priorities 3749
  Facilities for 3764
  Funding 3762
  Size of 3763
  Structure of 3767
  Support requirements 3899
Rapid Deployment Joint Task Force (RDJTF) 3726, 3766
  Capabilities 3719
  Commitment of other theaters, effect 3761
  Funding 3759
  Geographical missions 3745
  Mission 3715, 3768
  Shaping the 3733
Rapidly deployable surveillance system 3710
Ras Banas 3740
  Construction, risks of delayed 3765
Ready Reserve force 3862
Rescue and recovery service 3863
Research & Development (R&D):
  Items reduced 3667, 3706
  Objectives, major 3654, 3801
  Policy and strategy 3651
  Program issues 3654
  Programs, submarines 4042
Reserve fleet manning 3901
Rolling airframe missile 3822

S

SAL-GP 3871
SH-2F Seasprite (LAMPS) 4049, 4052
SH-60B Seahawk 4048, 4052
SL-7:
  Fast sealift ships 3887
  Funds for 3888
SM-2/SM-3 missiles 3823
SM-3 3795
SS-NX-19 profile 3549
SSES (Seamod) 3828
SSN-688 in place of Trident 3702
Salvage ship, ARS 3814
Sea battles, simulated 3582
Seafire 3777
Sealift:
  Enhancement 3862
  Fast 3860
Seapower 3699, 3954
Self defense 3804

Page

- Ship(s):
  - Additions and retirements: 1970–90 3689
  - Conform 3703, 3820
  - Counting the numbers 3692
  - Design funding 3826
  - Expected service lives of 3695
  - Modernization 3700
  - Procurement price escalation index 3949
  - Procurements, lengths of time 3696
  - Propulsion R&D 3787
  - Size and cost 3780
  - Systems engineering standards (SSES) 3704
- Ships and aircraft to restore maritime superiority 3711
- Shipboard data multiplex system 3819
- Shipbuilding 4081, 4103
  - History and program 3606, 3627
- Shortfall under existing scenarioes 3965
  - Solid shield 3834
- Southern hemisphere, importance of 3575
- Southwest Asia:
  - Funding for 3736
  - Military construction 3763
  - Threats to U.S. interests 3768
  - U.S. interests 3713
- Soviet:
  - Aggression, genuine peril 3718
  - All-around Navy 3576
  - Amphibious capability 3572
  - Chemical warfare 3585
  - Influence, limiting 3716
  - Invasion in Southwest Asia, deterring 3717, 3723
  - Land-based air threat 3583
  - Merchant marine 3590
  - Mine threat 3573
  - Missiles, future 3584
  - Naval aircraft 3553
  - Naval aviation land-based aircraft 3582
  - Naval threat 4093
  - Navy 3545
  - Pacific buildup 3577
  - Ship deployment 3561
  - Ship in Caribbean and Gulf of Mexico 3560
  - Submarine personnel 3584
  - Ties with Iran 3591
  - View of nuclear war 3585
  - Weaknesses 3571
- Soviet Union—a global superpower 3717
- Spare parts 3962
- Standard missile 3 3708
- Standard missile evolution 3804
- Strike platforms 3903
  - Acquisition 3911
  - Force levels 3911
  - Missions 3909
  - Platform to fulfill the mission 3910
- Strategic:
  - ASW 3548
  - Airlift and sealift 3750
  - Airlift, shortfalls 4003
  - Warning 3767
- Submarine:
  - Advance combat system 4078
  - Construction 3546
    - Funding 4057, 4058, 4059
  - Deep diving 4104
  - Diesel electric 4063, 4064
  - Force personnel status 4045
  - Readiness and sustainability 4045

	Page
SUBROC	3710
Replacement	3674
Sudan	3581
Deterioration of	3741
Surface combatant force level	3793
Surface mine countermeasure	3812
Surface-to-air missile system	3583, 3584, 3791

T

T-5 tankers	3900
TAKX program	4082
Tactical surveillance system, integrated	3825
Targeting, over-the-horizon	3826
Technical information system	3818
Third World:	
Contingency planning	3760
Deliveries to	3562
Threat, the	3799
Threats to U.S. interests	3758
Tomahawk:	
Cruise missiles	3807
Weapon systems	3807
Trident submarines, procurement	3701

U

U-boats versus allied merchant losses, World War II	4076
United States/Soviet:	
Comparative forces	3556
Military assistance	3721
USMC MAF amphibious lift	3866

V

Vertical launch system	3802
ASROC	3685

W

Warfare environment, future	3600
Warsaw Pact merchant marine	3586
Warning time, sufficient	3738
Weapon exercises, short notice	3834
Weapon inventories	3709
World ocean areas, where control is vital	3597
Crisis points, 1945-82	3598

○